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RECAP

Seventh Annual Report

OF THE

State Board of Health,

OF

THE STATE OF OHIO,

FOR THE

Year Ending October 31, 1892.

NORWALK, OHIO.
THE LANING PTG. CO., STATE PRINTERS.
1893.

OHIO STATE BOARD OF HEALTH.

Office of the Secretary.

Columbus, Ohio. *December 30, 1892.*

To His Excellency, William McKinley, Jr., Governor of Ohio:

Sir: In accordance with section 8 of an "Act to create and establish a State Board of Health," the accompanying report is herewith submitted for the year ending October 31, 1892.

Respectfully,

C. O. Probst, M. D., Secretary.

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MEMBERS OF THE BOARD.

	TERM EXPIRES.
H. J. SHARP, M. D., London	December 1892
S. A. CONKLIN, M. D., Canton.	December 1893
E. T. NELSON, M. A., Ph. D., Delaware	December 1894
BYRON STANTON, M. D., Cincinnati	December 1895
S. P. WISE, M. D., Millersburg	December 1896
WILLIAM T. MILLER, M. D., Cleveland	December 1897
THOMAS C. HOOVER, M. D., Columbus	December 1898

General Report.

The seventh annual report of the State Board of Health for the year ending October 31, 1892, is herewith presented.

PERSONNEL OF THE BOARD.

One change in the membership of the Board has been made since the last report. The appointment of Dr. A. J. Scott to fill the unexpired term of Dr. Joseph L. Anderson, not having been confirmed by the Senate, Dr. Byron Stanton, of Cincinnati, was appointed to fill the vacancy so created. Dr. Stanton's appointment was duly confirmed. The names and addresses of the Board are as follows.

S. A. Conklin, M. D., President	Canton.
H. A. Sharp, M. D	London.
E. T. Nelson, M. A., Ph. D	Deleware.
Byron Stanton, M. D	Cincinnati.
S. P. Wise, M. D	Millersburg.
William T. Miller, M. D	Cleveland.
Thomas C. Hoover, M. D	Columbus.
John K. Richards, Attorney-General, ex-officio	Columbus.

SMALL-POX IN SOUTHERN OHIO.

An outbreak of small-pox occurred in the southern part of the state in April, 1892, which threatened to become widespread. Owing to mistakes in diagnosis—the disease having been, for forty days, treated as chicken-pox—no measures were taken to prevent its spread, and hundreds of persons were exposed. The origin of the disease is of much interest. A merchant living in Pomeroy went to New York City to purchase goods, and about ten days after his return was taken ill with headache, backache, and some fever; no eruption was noticed. A physician who was consulted, prescribed a plaster for the pain in the back. The man was kept from his business a day or two and was not ailing more than a week. About ten days after he was taken sick, his son, aged nineteen months, was taken with vomiting, headache and fever, followed by a general eruption, which, in many respects, closely resembled the eruption of chicken-pox. The disease was so diagnosed by the attending physician, and subsequently by a council of five physicians. One other physician who saw the disease pronounced it small-pox; but the opinion of the council was accepted by the health authorities, and no precautions were taken.

A second child in the merchant's family was taken ill with similar symptoms, and school children with whom these children associated subsequently carried the disease home to their families, and several adults came down with the malady. The physician who had seen the child who was first taken sick, and had pronounced it a case of small-pox, was seized with the disease, and sent word to the authorities that he had small-pox. Still it was denied that the disease was small-pox, and nothing was done in the way of prevention. It spread to Mason City, West Virginia, a village directly opposite to Pomeroy, across the Ohio river, and a man who died there from it, (the nature of the disease not being recognized) was buried publicly, and his body was taken up within a short time, and re-buried at another place in West Virgiuia. This gave rise to many cases of small-pox in that state.

During all this time, at Pomeroy patients were visited by relatives and friends; and those who were in direct contact with the sick continued to attend school, church and mingle promiscuously with the public. Although eight or nine adults had contracted the disease, the fact that adults seldom or never have chicken-pox, did not convince the authorities that it was small-pox with which they were dealing—or rather not dealing—for nothing was done.

The rather sudden death, on May 28th, of a prominent citizen, Judge Brewster, whose daughter, a young lady, had then had discrete small-pox for eighteen days, caused general alarm, and the health authorities then began to take active measures to stay the disease. A large number of people had been exposed—it was difficult to say who had not been—and it was impossible to predict how wide-spread the epidemic might become.

It is one of the remarkable features of this epidemic that so few of those who were exposed, contracted the disease.

The attention of the State Board of Health was first called to the presence of the disease by newspaper reports published May 19th,—more than a month after the first case appeared—and, in answer to a communication in regard to it, the Board was assured that the disease was chicken-pox, and that no assistance was needed. On June 2nd, the secretary was sent to Pomeroy to investigate, and at a meeting of the Board held June 5th, it was decided to enforce quarantine regulations at Pomeroy, Middleport, and Gallipolis, the disease having then spread to the latter towns.

At this time, small-pox was reported to be present in many other Ohio river towns and to have spread along the Kanawha river in West Virginia, so that a general epidemic was feared.

The quarantine rules adopted by the Board provided that all passengers, baggage and freight leaving Gallipolis or Middleport by rail or river should first be inspected by a medical inspector apppointed by the Board. Household goods, rags, etc., were forbidden shipment.

At Pomeroy, passengers and baggage were not allowed to leave until it could be learned who had been exposed to small-pox, after which, persons who submitted to vaccination were given certificates, and allowed to go. All train crews, yardmen and freight handlers were vaccinated.

The Gallipolis authorities had stopped the running of trains from Pomeroy and Middleport a week prior to the Board's assuming control of quarantine, and as a consequence, large shipments of iron, coal, salt, berries, railroad ties and other freight had been tied up at these places. These were promptly sent out by the Board's inspectors, and serious losses from this cause were averted. Arrangements were made with the state health authorities of West Virginia so that passengers, express and freight from infected districts would be received when accompanied by a certificate from the Board's inspectors; and although a number of places had strictly quarantined against the infected towns, and refused to receive passengers or freight on certificates from the local authorities, in no instance was there any restriction placed on travel or commerce when properly guaranteed by the medical inspectors of the State Board. The advantages of placing quarantine in the hands of a central authority were never more apparent. Although traffic was in a great measure opened up (the presence of small-pox of course largely cut off trade, aside from quarantine restrictions) not a single case of small-pox occurred in Ohio, nor so far as known, in any other state, which could be traced to the infected towns after the Board assumed control. While the American public has always been most generous in contributing aid to a city or nation in great distress, it may often be noted that rival business towns are quick to take advantage of the presence of an epidemic, and under the cloak of protecting their communities against disease, will impose needless quarantine restrictions for the purpose of diverting trade. This was noted in several instances during this epidemic; and this is one of the evils of permitting an unrestricted enforcement of quarantine by local authorities.

Local authorities have so frequently resorted to the practice of concealing the real extent of an epidemic, that their reports are seldom credited abroad; and a valuable service was rendered by the State Board to the infected towns by publicly announcing, from time to time, the exact conditions in infected places, and in promptly correcting the many false rumors which were being continually started

Cases of small-pox continued to prevail in Pomeroy until August 5th, when the last case was discharged, and the town declared free from infection. There occured in all 59 cases and 5 deaths from small-pox in Pomeroy, nine cases in Minersville, three cases in Chester, one case in Gallipolis, three cases in Middleport, and one case in Jackson.

The exact number of cases which occurred in West Virginia is not known, though some fifty or sixty cases and five or six deaths were reported.

A few words may be said here in regard to vaccination.

When small-pox appeared in Pomeroy, but few children under ten years of age were protected by vaccination; and this in spite of the fact that small-pox prevailed in that vicinity about ten years ago. The same conditions as regards unprotected children existed in other towns invaded by small-pox, and a large part of the work of the health authorities consisted in hunting up and vaccinating unprotected persons.

And what is true of Pomeroy and neighboring towns, is true of the majority of towns throughout the state, with the exception of our large cities; and it is this exception which should be noted. In our large cities, where sanitation is usually more advanced, boards of education adopt a rule—which they are empowered by law to do—requiring every child who enters the public schools to be vaccinated. This rule is manifestly just, for with but few exceptions the power of vaccination to protect against small-pox, is unquestioned; and the public welfare demands that there shall not be found in any community a sufficient number of susceptible individuals to give rise to an epidemic of small-pox. But if this rule in regard to vaccination of school children is necessary in cities it it should be enforced in the smallest village; and it is therefore advocated that a general law requiring vaccination of school children, to be made applicable throughout the state, should be enacted. It is true that this measure would give no protection to children under school age, but such children are not nearly so liable to be exposed to small-pox.

The propagation of vaccine virus might well receive the attention of Legislature. It was found difficult to obtain a sufficient amount of virus to meet the demands for vaccination in Pomeroy and adjacent towns; and much that was received proved inert, or worse. This has been the case in most epidemics of small-pox; and the matter of securing absolutely pure virus on short notice, is always a difficulty with which physicians and health officials have to contend.

We would therefore recommend that the advisability of establishing a vaccine farm in connection with the Ohio State University, be taken under consideration. The product of the farm would probably more than pay expenses, and the purity of the virus could be officially guaranteed.

The experience at Pomeroy shows in a most noteworthy manner the efficacy of vaccination in preventing small-pox. In not a single instance did an individual contract small-pox where vaccination had been recently and successfully done, though constantly associated with small-pox patients. In many cases where the disease invaded a family, the unaffected were not vaccinated until twenty-four hours after exposure, yet not one of these contracted small-pox, where vaccination was successful.

For a full report of the epidemic, which presented many unusual and interesting features, reference should be made to the secretary's report.

CHOLERA.

The appearance of cholera in this country was the cause of almost universal alarm, and was the occasion for extraordinary measures to be taken by this Board. A detailed account of these is given on another page under the report of the secretary, but some general remarks concerning the disease, and the condition of the health service of the state for coping with an epidemic of cholera may be considered in the general report.

It should be stated in the beginning that the danger to this country and to Ohio from cholera has by no means ended. On the contrary, public health authorities are practically agreed in believing that our greatest danger will come with the advent of warm weather in 1893, so that the consideration of measures to prevent the development and spread of cholera may, with propriety, occupy present attention.

Certain facts in connection with the epidemic of this year have an important bearing on the subsequent introduction of the disease into this country. The rapidity with which the disease was carried from its habitat in India to European soil, whence it spread to innumerable places, is a noteworthy fact, and was undoubtedly due to the new lines of railway which have opened communication with new, and with respect to cholera, dangerous territory. Whereas, heretofore it has required years for cholera, in its westward march, to reach Europe, it is now a matter of weeks, and the introduction of cholera from the East, where it constantly prevails, to a greater or less extent, to the civilized nations west, is, unless prevented by international measures, liable to occur at short intervals, instead of widely separated periods, as in its past history.

The presence of the disease in Hamburg teaches the necessity of protecting public water supplies, and enforcing strict municipal cleanliness. Year after year has this city been scourged with cholera, and yet, in spite of such warning, the gravest sanitary evils have been permitted to exist. The attempted concealment of the existence of the disease until it had become firmly established, not only casts serious reflection upon the integrity of her public officials, and will lessen confidence in her health certificates hereafter issued, but was undoubtedly the means of spreading the disease among her own inhabitants. The practice of concealment in regard to epidemic diseases is always hazardous, if not criminal, and cannot be too severely condemned.

Another lesson to be learned from the epidemic of this year is, the value of the continuous enforcement of well-known measures of municipal sanitation in preventing the spread of cholera after its introduction. England's quarantine measures were the reverse of rigid, and yet while no less than twenty-one importations of the disease into England occurred this year in no instance did it spread from the imported case. It will be well, however, to remember that the health service in England is in excellent condition, and all of these imported cases were promptly dealt with by local authorities to prevent spread of the disease.

The same happy experience was witnessed in New York City, the health authorities, by preparations made in advance, having been able to stamp out the disease which had eluded quarantine and appeared in that city.

The threatened epidemic has forcibly called attention to the evils of unrestricted immigration to this country, and congress has a duty in this direction which we trust public sentiment will allow no longer to be postponed. Our greatest danger from cholera next year will come from the admission of immigrants and their effects, and if immigration is not restricted, it is doubtful whether the present quarantine defenses of this country will be able to protect us against an invasion of cholera.

The protection of Ohio against cholera depends (a) On the ability of quarantine at the sea-board to prevent the introduction of the disease. (b) On the establishment of internal quarantine at the state line, after cholera has passed the sea-board defenses, or in advance of this, if such quarantine is not considered sufficient protection. (c) On the prompt action of local authorities in dealing with first cases of the disease which pass quarantine at the state line, and (d) On municipal preparation in advance of the disease, by the removal of cholera breeding soil and by protecting water supplies from contamination. Let us briefly consider these defenses in the order named: (a) Sea-board quarantine: The national government, through the marine hospital service, has charge of quarantine stations at five or six of the less important ports of entry, but the ports where probably nine-tenths of all immigrants are received, are under the control of local or state authorities. There is reason to believe that many of these are unprepared to deal with a cholera-infected ship, so as to remove all danger to interior states from passengers and their effects. But our safety also depends to a great extent on the quarantine defenses of Canada, and to a less degree on those of Mexico. As a quarantine commission of the National Conference of State Boards of Health is now investigating the condition of all quarantine ports of North America, and will shortly report on its findings, further remarks on this subject will be withheld, except the statement that no system of quarantine affords absolute protection, and that interior states in time of danger must enforce additional precautions to guard against epidemic diseases.

(b) Barriers against cholera may be erected at state lines: It is often remarked that land quarantines are useless, the opinion being based on the difficulty of their application and their easy evasion. It is no doubt impossible to establish a quarantine guard that will prevent all persons from an infected district entering a state or city, but that a relative, if not absolute, protection is thus afforded, can be established beyond doubt. While cholera may not be kept out of the state by this measure, many communities may be protected from the disease which would otherwise suffer. For in the history of land quarantines, where persons from infected districts arriving by main lines of travel, have been detained for observation, many such have arrived or have been taken sick while detained who, but for such detention would have introduced the disease into the commuity to which they were destined; and it cannot be doubted that by a thorough disinfection of the clothing, baggage and effects of those not sick, but who come from an infected district, the introduction of the disease would often be prevented. Where cholera has passed internal quarantine lines, it has usually been due, not to complete evasion of quarantine, but rather to the imperfect enforcement of disinfection, or to detention for an insufficient length of time of suspected persons.

The State Board of Health has inaugurated a system of quarantine which can be placed in effect on short notice. Quarantine stations on all railroads at state lines have been selected by the Board. Medical inspecttors have been appointed, and all the necessary arrangements have been made for inspecting passengers, detaining "suspects," and disinfecting baggage. Arrangements have also been made to protect our lake border, so that state lines will be promptly guarded on the approach of cholera.

(c) The prompt care of imported cases by local authorities: An efficient health board in each community, ready to deal with first cases of cholera, is one of the best safeguards against spread of cholera the state can have. With but few exceptions, a board of health has been established in each municipality of five hundred or more inhabitants, in this state; and while these are of average efficiency as compared with those of other states, there is much to be desired in this respect. In quite a large number of towns the boards are fully alive to their duties, and are well trained in preventing the spread of an infectious disease. In such communities a case of cholera would be promptly reported to the health authorities as soon as recognized; the house and inmates would be guarded, and proper measures for disinfection would be enforced.

In many places, however, boards of health are inactive; little is done to prevent the spread of scarlet fever or diphtheria—diseases always present in this state—until an epidemic is started, and such boards would be unprepared to deal with a case of cholera.

The unincorporated villages and rural districts are in great measure unprotected against cholera by health organizations; the township trustees have been given authority to prevent the spread of small-pox, and the same authority could be used for the prevention of cholera; but as small-pox is a rare visitor to our state, trustees are entirely unpracticed in controlling infectious diseases, and would be almost totally unprepared to arrest the spread of cholera.

It is worthy of note, in this connection, that it is the history of outbreaks of cholera in cities, that the inhabitants flee to the country for safety, and often carry the disease with them. It should therefore be the duty of properly appointed persons, with ample powers, to guard the rural districts not only against cholera, but against all dangerous, communicable diseases.

(d) Municipal cleanliness and protection of water supplies: All past experience goes to show that in a community which is in good sanitary condition, and with a water supply not liable to pollution, cholera cannot become epidemic; and the disease, if imported, finding conditions unfavorable for its propagation, speedily subsides. Quarantine does not afford absolute protection againt cholera; and even with an efficient board of health, failure to recognize initial cases may lead to a pollution of the public water supply, or to the dissemination of the germs of the disease in filthy places, there to multiply and spread until an epidemic is fully established,

If cholera is introduced into this country, the disease is liable to be conveyed to any of our cities; and their greatest safety will consist in measures of municipal sanitation, carefully planned and thoroughly carried out in advance. Fortunately this country has had ample warning—it has barely escaped an epidemic, and now has seve:al months in which to prepare for the enemy.

What is the sanitary condition of Ohio towns to-day?

Probably neither better nor worse that the towns of many other states, and yet far from satisfactory. Many of them have public water supplies taken from rivers and streams which receive the sewage from thousands of people living on the streams above them. The experience in Italy, France and Spain during the epidemic of cholera in 1884-5, shows that running streams receiving sewage, may convey the germs of cholera for long distances; and in spite of the assertion that rivers soon purify themseles, with which inhabitants of river towns are wont to meet all arguments concerning the pollution of their water supplies, the prevalence of cholera in our state will place these cities in grave danger. Many of our smaller cities derive public water supplies from small streams with water sheds of agricultural lands, receiving the drainage of numerous privies, hog-pens, stables, and other sources of filth; and without the utmost precaution, in time of cholera, there will be great danger of pollution of water supplies obtained in this way. But public water supplies usually afford much purer water then private wells, which in old settlements are often in close proximity to leaching privy vaults. The The privy vault system for the disposal of excrement is found throughout the state, few, even of our largest cities, being entirely free from vaults. Where these are uncemented, and wells are used, there is great danger of the spread of cholera when the disease is once introduced into communities.

Not only is cholera spread by the use of such wells, but what is of more imporance to our state, typhoid fever and other diseases are propagated in this manner; and the total abolition of all uncemented privy vaults in the state, would remove one of the sources of greatest danger to the public health.

Compared with the sanitary condition of towns found throughout Spain, France, Italy and Russia, where cholera raged in 1884-5, Ohio towns are immeasurably in advance. But too much stress should not be laid on this fact in considering our danger from cholera, for it has been noted that even in the filthiest towns, cholera does not usually prevail as an epidemic *unless the water supplies become contaminated*, and conversely, our cleanest cities, if supplied with water liable to pollution by cholera discharges, are likely to suffer severely when cholera prevails. We should therefore not flatter ourselves that Ohio is in no danger from cholera; but rather let us clearly recognize wherein this danger is found, and utilize the present opportunity to remedy the conditions which past experience teaches are responsible for epidemics of this disease.

A brief statement may be made here of the measures which were adopted by the Board to meet the invasion of cholera, with which the state was recently threatened.

On September 3d, in view of threatening conditions abroad, and at New York quarantine, a meeting of the Board was held, and a plan of quarantine inspection adopted. It was decided to establish an inspection service at the following points at the state line: Conneaut, on the Lake Shore and Michigan Southern and Nickle Plate Rys; Latimer on the Erie Ry; Youngstown, on the Pittsburg, Ft. Wayne and Chicago, and Erie Rys; East Palestine, on the Pittsburg, Ft. Wayne & Chicago Ry; East Liverpool, on the Cleveland and Pittsburg Ry; Steubenville, on the Pan Handle Ry; Bellaire and Belpre, on the Baltimore & Ohio Ry; Ironton on the Norfolk and Western Ry., and Cincinnati, on the Chesapeake and Ohio Ry. Toledo was also to be guarded by the state unless cared for by the local authorities.

Committees of the Board visited each of these places and appointed medical inspectors, who were instructed as follows: A suitable site for a quarantine camp was to be selected; a male and female nurse for cholera patients were to be engaged; arrangements were to be made for the speedy erection of suitable buildings at each station for the fumigation of baggage, etc.; and for securing supplies of food and water for the camps. The inspectors were to hold themselves in readiness for duty on receipt of telegraphic notification.

On the 14th of September the whole country was thrown into alarm by the report of five deaths from Asiatic cholera in New York city, and a meeting of the Board was held on the following day to consider measures to protect the state. Quarantine rules were adopted which forbade railroad and other transportation companies to bring into the state any person suffering with cholera or suspected cholera. Immigrants were required to be transported in special cars to which all other persons were denied access; and only such immigrants were permitted to come into the state as were provided with proper certificates ensuring freedom from the disease, and the proper disinfection of their baggage.

Medical inspectors were instructed to meet all trains entering the state at points previously named and carefully inspect all passengers and crews; they were also instructed to notify local authorities in advance of the expected arrival of all immigrants destined for Ohio found on trains, thus enabling the health authorities to place such immigrants under observation, when this was deemed advisable. In the event of a cholera patient or "suspect" being found on train, inspectors were instructed to detain the car in which such person was found, sidetrack it at the quarantine station, and wire the Board for assistance.

With the assistance of the Governor and Adjutant-General arrangements were made by which a complete camping outfit for one hundred persons could be placed at each quarantine station within twenty-four hours notice. Full instructions were given inspectors for arranging cholera camps for the care of the sick and suspects, and for those detained for observation.

Inspection of trains was commenced on September 18th and continued until October 4th, when, conditions seeming to justify it, quarantine was raised.

Early in September the state appeared to be in danger from the arrival of unwelcome immigrants via Canada. The President's order, requiring twenty days detention of all immigrants, it was feared, would divert such travel to Canada, and until that country adopted satisfactory measures to avert this danger it was determined to establish quarantine at all ports of entry on lake Erie, Subsequently the Provincial Government adopted satisfactory regulations for guarding the St. Lawrence river, the point of greatest danger, and state quarantine on the lake was withdrawn.

The most cordial support was given to the Board by railway officials in the enforcement of quarantine, and the suggestions as well as the rules of the Board were promptly enforced. The opportunity is here taken to express our most cordial thanks for the efficient manner in which the Board's efforts to guard against the introduction of cholera were supported by these officials.

In connection with the matter of quarantine, we desire to call the attention of the Legislature to the laws of our state. Local boards of health have been given almost absolute quarantine power; and any incorporated village of five hundred inhabitants may, under present laws, absolutely prohibit the running of trunk lines of railroads through its limits. While the total suspension of traffic to prevent the introduction of a pestilential disease might, under extraordinary circumstances become necessary, the power to do so should be lodged in the hands of a central authority, as local boards are seldom in position to judge whether the necessity for such stringent measures exists. While local authorities should not be deprived of the power to establish quarantine, the State Board of Health should have power to remove needless restrictions which fear, and an imperfect knowledge of the danger to be met, may cause to be imposed. The first object must always be the public safety, but commercial restrictions should never be greater than necessity requires; and the traffic of our great trunk-lines should not be at the mercy of conflicting regulations which may be adopted by the health authorities of every village though which they pass. In considering the recent small-pox epidemic in southern Ohio, attention has been called on a previous page to the fact that rival business communities, sometimes impose needless quarantine restrictions, not for protection, but for commercial benefit. Under the present law there is no power to regulate this, and the regulations of a local board of health cannot be suspended even by the State Board of Health. Some little trouble was occasioned during the recent experience of cholera on account of conflicting quarantine regulations adopted by the State Board of Health and the health authorities of the city of Cleveland. The State Board permitted immigrants to come into this state who presented proper health certificates from the national or state quarantine authorities, after they had been examined by our medical inspectors, and pronounced free from danger. The Cleveland authorities prohibited all immigrants from entering that city; and immigrants found on trains were turned back onto other Ohio towns by their inspectors, causing great alarm in these communities. So far as known, Cleveland was the only city in the United States from which immigrants were absolutely excluded. The matter was referred to the State Board of Health by many indignant communities, but this regulation was continued for some time, in spite of the protests of this Board.

In view of the facts here presented, we respectfully urge that the act creating the State Board of Health should be so amended as to give the Board absolute control of all quarantine matters. It would not be wise to take from local authorities the power to enforce quarantine rules, but such rules should be subject to revocation by the State Board of Health.

Attention is called to the needed revision of the health laws of the state; these laws have been enacted from time to time, most of them prior to the establishment of the State Board of Health. Many of them are inadequate or unsuited for present conditions; some are conflicting and others are useless or undesirable.

At a joint meeting of the state and local health authorities held in Columbus in January, 1892, a committee was appointed to revise and amend the laws relating to boards of health. This committee has had several meetings, and has formulated a series of amendments which were submitted to the State Board of Health for approval. The report of the committee, as amended by the State Board of Health, was printed, and a copy sent to each board of health in the state with a request that careful consideration be given it, and the committee furnished with such amendments as in the opinion of each Board seemed essential. The committee has had a final meeting at which all such amendments were given due consideration, and has presented its final report to the State Board of Health. The report has been approved by the State Board, and is embodied in a bill which will be presented to the legislature during the coming session. We earnestly trust this bill will be enacted into a law, as the public health will undoubtedly be conserved thereby. One feature of this bill deserves special attention, namely: Under the present conditions, as has been previously pointed out, little or no protection is given by law to inhabitants of rural districts. Contagious diseases are permitted to prevail, practically without attempt to control them, and nuisances and conditions detrimental to health continuously exist because no one is authorized to apply proper remedies. While the health laws applicable to the country may be made more simple than those intended for cities, the protection to life and health afforded by the state should apply to all citizens, and no community, no matter how sparsely settled, should be left unprovided.

Attention has been called in former reports to the lack of forethought and care on the part of water-works authorities, in securing the purest possible public water supply. In view of what has been said relative to the spread of cholera by means of water for domestic purposes, the importance of guarding public supplies from pollution will be apparent. The matter cannot always be safely left to the local authorities, if the public health is to be paramount, and the state, through the State Board of Health, should have power to interfere where public water supplies are being polluted in a manner which could be avoided, or where communities propose to select an objectionable source for a water supply, when a better could be found.

It may be thought that self interest will prevent evils of this kind, and that this matter may very well be left to local authorities, but many instances to the contrary can be cited in our state; and the fact is no doubt owing to the lack of information on the part of those who select the source of public water supplies, as to what constitutes a potable water, and also to considerations of purity of supply being given second place, the easiest available supply being selected.

The conditions injuriously affecting sources of public water supplies grow worse each year, and the remedy correspondingly more difficult to apply. The populations along our streams are rapidly increasing, and as villages grow into cities, sewerage systems are introduced, and the streams made use of for sewage disposal; often the same stream affords the only available source of a public water supply for such towns. Each is at the mercy of the town above, and is forced to drink water polluted with the excrement of its up-river neighbors. There can be no remedy for such conditions until the whole question ot sewage disposal and public water supplies is placed in the hands of a central authority.

The rights of the state to control this question cannot be gainsaid; and some of our eastern states have already enacted laws for this purpose.

The laws of Ohio prohibit the emptying of the contents of privy vaults into streams, if such matter is hauled and *dumped* into them; but permit, or do not forbid this when such matters are carried by sewers. The absurdity of such legislation is apparent.

There is perhaps no questions which more nearly concerns the welfare of the state, than the preservation of the purity of public water supplies, and the matter is deserving of the serious consideration of the General Assembly.

For a detailed statement of the Board's operations during the year we respectfully refer you to the report of the secretary, which immediately follows.

Secretary's Report.

ABSTRACT OF THE PROCEEDINGS OF THE BOARD DURING THE YEAR ENDING OCTOBER 31, 1892.

JANUARY MEETING.

A regular meeting of the State Board of Health was held in Columbus, January 27, 1892.

Present: Drs. Sharp, Hoover, Conklin, Scott, and Prof. Nelson; Dr. Sharp, president, in the chair.

The minutes of the last meeting were read and approved.

The secretary presented his quarterly report, which was approved and ordered filed for publication.

On motion of Prof. Nelson it was voted to set aside annually two hundred dollars to be used by the secretary in purchasing books for the library.

The secretary reported that a child that had died from diphtheria had been transported by rail from Spring Mills, O., to Gibsonburg, O., which was the means of introducing the disease into the latter place. He also reported that the body of a child that had died of scarlet fever had been shipped to Delaware, Ohio, in a casket not hermetically sealed, although accompanied by an affidavit of the shipping undertaker that the case had been so prepared.

On the motion of Dr. Hoover, the secretary was instructed to confer with the Attorney-General, and if so advised by him, to commence prosecution at once.

Dr. Sharp reported back the bill prepared by Mr. Strawn, C. E., in regard to the control of public water supplies, and moved that it be referred to the committee on legislation. The bill was so referred.

Dr. Sharp asked for further time to report on the investigation of the pollution of the Ohio river. The request was granted.

Prof. Howard being present, gave, on request a short description of his examinations of Ohio river water.

On motion of Prof. Nelson, as amended by Dr. Scott, subscriptions for sanitary journals were ordered continued; and the secretary was authorized to subscribe for such additional journals as were needed in the office.

On motion of Dr. Scott, the secretary was instructed to prepare for Prof. Nelson, suitable credentials of his membership of the Ohio State Board of Health, for his use while abroad.

Prof. Nelson called up his resolution, offered at the October meeting, providing that all standing committees shall consist of three members, and a standing committee on legislation be established. On motion, the resolution was adopted.

The following resolution was presented by Dr. Conklin, who moved its adoption:

Resolved: That the Ohio State Board of Health most cordially approves and urges the adoption of measures to establish a National Department of Public Health, and the appointment of a Medical Secretary of Public Health.

In this connection, the secretary read the text of a bill to establish a Department of Health, introduced in the United States Senate by Senator Sherman.

On motion, the resolution of Dr. Conklin was adopted, and the secretary was instructed to send a copy of the same to all members of Congress from Ohio.

Adjourned.

SECOND SESSION, JANUARY 28, 9:45 A. M.

The secretary presented a bill to create Boards of Health in all municipal corporations and townships; also a bill to regulate the transportation of dead bodies.

On motion of Dr. Hoover, the secretary was instructed to refer both bills to the Attorney-General and Judge Okey for revision, and to secure their introduction before the General Assembly.

On motion of Dr. Hoover, the secretary was authorized to inform the Lima health authorities that, if they so desired, the State Board of Health would defray the expense of further examination of water suitable for a public supply.

The secretary read the bill prepared by Mr. Strawn, C. E., giving the State Board of Health the supervision and protection of water supplies, and stated that the bill had been approved at a recent meeting of the Society of Civil Engineers, who pledged themselves to support it.

On motion of Dr. Hoover, the secretary was instructed to inform Mr. Strawn that the Board approved the bill, but it was deemed advisable by this Board that the bill should be introduced by request of the Society of Civil Engineers.

There being no further business the Board adjourned to the chapel of the First Congregational Church to take part in the joint meeting of State and Local Boards of Health, where the following program was given:

PROGRAMME.

FIRST SESSION,
THURSDAY, JANUARY 28, 1:30 P. M., STANDARD TIME.

I.

Introductory Remarks.

H. J. SHARP, M. D., *Pres't State Board of Health*......................................London.

II.

Is it necessary or practicable to quarantine adult members of families in which there are cases of diphtheria?

W. L. BUECHNER, M. D., *Health Officer*..Youngstown.

III.

The registration of vital statistics.

C. O. PROBST, M. D., *Sec'y State Board of Health*..............................Columbus.

SECOND SESSION,
THURSDAY, JANUARY 28, 7:30 P. M. STANDARD TIME.

I.

Desirable Sanitary Legislation.

GEORGE P. HUNTER, ESQ..Warren.

II.

The prevention and restriction of contagious diseases.

THOS. C. HOOVER, M. D., *Mem. State Board of Health*............................Columbus

III.

What precautions should attending physicians be required to take to prevent conveying infectious diseases?

T. T. CHURCH, M. D., *Health Officer*..Salem.

Secretary's Report.

PRESENTED AT THE JANUARY MEETING.

Mr. President:—Your Secretary begs leave to offer the following quarterly report:

REPORT ON THE SEWERAGE AND WATER SUPPLY OF LIMA, OHIO.

Following instructions I visited Lima, November 7th, and in company with Dr. R. D. Kahle, health officer, made an inspection of the drainage and water supply of the city.

It will be remembered that I was called to Lima by the board of health on account of an alleged nuisance arising from the pollution of the Ottawa river, but it soon appeared that a question of far greater urgency, and one affecting the health of Lima's citizens much more directly, would have to be met; for the water supply was found to be absolutely bad.

The city built water works in 1887, the source of supply being a small creek which flows only in wet weather. This creek is impounded in a reservoir six acres in area, and eight and a half feet deep at the center, with shallow margins and having a bottom of natural earth. Water from the impounding reservoir is delivered by gravity to a storage reservoir about half a mile distant. This reservoir covers twenty-one acres, and is 18 feet deep, with natural earth bottom. Water is pumped direct to consumers. The drought of last summer cut off all supply from the impounding reservoir, and an auxiliary pump was placed on the bank of Ottawa river, and the water pumped from the river to the storage reservoir. This supply had been in use since June. The stream, euphoniously called Ottawa river, and also hog creek, which is more appropriate, is a small sluggish stream, which when seen by me, could probably have been carried by a five inch pipe. At the point where the auxiliary pump was placed, there was a kind of shallow basin which would be pumped dry in a few hours, and the pump would be stopped until sufficient water had again been collected. The stream here was quite dirty looking.

Further down, just above the paper mill, is a dam, constructed by the paper mill company. Little or no water was running over this dam.

I learned that the county infirmary and children's home were situated near the banks of the Ottawa river a little distance above the auxiliary pumping station, and Dr. Kahle and I accordingly visited those institutions. The infirmary is about two miles from Lima, and is located on an elevation about fifty yards from the river. Kitchen slops, laundry and bath slops, and other liquid wastes are conveyed from the building by an 8-inch sewer to an open drain which carries water from a small spring that flows most of the year. A branch of this sewer connects with the privy vaults, which are placed back of the building. The open drain flows across a broad meadow, and empties into Ottawa river about a mile and a half from the auxiliary pumping station of Lima. An average of 100 persons use the infirmary sewer, and about one-half the flow of the open drain is sewage. As nearly as could be calculated without measurement, the flow of the drain was equal to one-half the flow of the river where the drain empties into it.

We were informed that a year previous several cases of typhoid fever occurred in the institution, the former superintendent having died of the disease. The excreta from these patients were thrown into the vault, and doubtless found their way to the river. A year later, this would, in all probability, have produced an epidemic of typhoid fever in Lima equal to the famous Plymouth epidemic.

About one-half mile further down the stream, and one mile from the pumping station, a sewer from the children's home also empties into the river. This institution contains on an average 50 persons, and all liquid wastes from it are drained into the river. It is safe to say that one-quarter of the water being pumped to the storage reservoir, when I was there, was sewage; and I was told by the man at the pumping station, that though the water in the creek was pronounced bad when we saw it, it had been much worse for weeks before. He carried a day's supply of water from home, being afraid to drink the water from the river.

The majority of the people of Lima depend on the public water supply, and the wells in most parts of the town are polluted. In spite of the fact that the reservoirs contained but a limited supply, I considered it advisable to recommend the immediate stoppage of pumping from the Ottawa river. A meeting of the local board of health was called, and the city solicitor drafted the following resolution, which was adopted:

WHEREAS, The board of health of the city of Lima, Ohio, in conjunction with the secretary of the state board of health has investigated the auxiliary source of water supply now being used and pumped from the Ottawa river by the water works trustees of the city of Lima, Ohio, and

WHEREAS, They find said auxiliary water supply to be impure and to be contaminated with sewage and other foreign substance detrimental to the good health of the city of Lima. Therefore be it

Resolved, By the board of health for the city of Lima, Ohio, that the auxiliary water supply now being taken from the Ottawa river is hereby condemned, and said water works trustees are hereby requested to immediately cease the further emptying said water into the reservoir or water mains of the city of Lima, Ohio.

Resolved, That a copy of these resolutions be immediately served on the water works trustees.

The pumping was stopped the following day.

It was evident that Lima should have a new water supply, and attention was given to that problem. By increasing the capacity of the storage reservoir it would be possible to collect a sufficient supply to last four or five months. Fostoria has done this, the system being similar to that of Lima.

The present supply for Lima however, is not good, being the drainage of a small water shed containing many houses and much manured farm land. The Ottawa river, by keeping out of it the sewage from the infirmary and children's home, might be available, but the same objection to it would, to a large extent, hold good.

Artesian water abounds in the neighborhood, and attention was given to this. Numerous wells have been drilled for natural gas near Lima, and artesian water was found in most, if not all of them.

About two miles from the large reservoir I examined an overflowing well which has been flowing for several years.

The water was clear and sparkling, having a slight sulphur odor and taste, but not sufficient to condemn it for domestic purposes.

The daily flow would probably amount to 300,000 or 400,000 gallons, which it was calculated could be more than doubled by pumping. Still nearer the reservoir is an artesian well which has been plugged for some time. The character of water in this well is said to be the same as in the well just mentioned. It is near the banks of the Ottawa river, and at one time the overflow was conducted to the paper mill— probably one half or three quarters of a mile distant, and furnished the entire supply for the mill—estimated at one million gallons daily. It would require a comparatively short line of piping to carry this supply to the conduit leading from the impounding to the storage reservoir; and if this supply were satisfactory as to quality, it would probably not require more than $1,000 (using the auxiliary pump already purchased) to furnish Lima with an abundant supply of artesian water.

With this end in view, a chemical and biological examination of the water from the flowing well (assumed to be the same as that in the plugged well) was made, and also of the water pumped from the storage reservoir at that time (Nov. 7th), and from the Ottawa river where the auxiliary supply was obtained. The results of the examinations were most surprising; the sample of artesian water showed worse in every respect than either the hydrant or river water. Following is the report of Prof. Howard Chemist:

COLUMBUS, OHIO, *Nov. 16, 1891.*

ANALYSES OF WATER FROM LIMA.

1. Pumping station.
2. City water from faucet in Dr. Kahle's office.
3. Well water.

	Oxygen required.	Free ammonia.	Albuminoid ammonia.	Nitrous acid.
1.	.31	.034	.018	.001
2.	.73	.018	.062	.002
3.	42	.072	.216	.001

CURTIS C. HOWARD.

Prof. Bleile reported as follows:

Bacteria per c. c.

1. Pumping station	800
2. Hydrant water in Dr. Kahle's office	660
3. Artesian water (estimated)	2,000

The gelatin culture was completely liquified in the last sample, and the estimate of 2,000 bacteria (they could not be counted) was probably too low. The liquefaction would seem to indicate the presence of putrefactive bacteria.

It will be noted that the chemical and biological examinations of the samples of artesian water are in harmony, the water being very impure both organically and biologically.

It is difficult to explain how this well could have become polluted. The water comes from limestone 180 to 200 feet from the surface, and 140 feet or more from the surface of the limestone. There are no local sources of contamination. The samples were collected by Dr. Kahle with much care. The samples for chemical analysis were collected in bottles washed in strong sulphuric acid, rinsed in distilled water, and again with water from the well at time of collecting. The bottle was passed down inside the iron tube, down under the flowing stream of water in filling it.

The bottles for biological samples were heated thoroughly in a hot oven, and stoppered with glass stoppers immediately after collecting samples, the stoppers being covered with india rubber bandage, sterilized by immersion in a bichloride of mercury solution. The bottles were shipped in ice, which would prevent multiplication of germs in transit.

A second lot of samples were obtained for examination December 1st. Dr. Kahle reported that he took great care to prevent any contamination from outside sources.

Prof. Howard reported as follows:

COLUMBUS, O., *December 18, 1891.*

DR. C. O. PROBST, *Secretary State Board of Health.*

DEAR SIR:—Following are the results of the second examination of Lima water:

	Oxygen Required.	Free Ammonia.	Albuminoid Ammonia.	Total Solids.
Artesian well,	.18	.054	.006	126.
Water from hydrant,	.64	.017	.043	79.6

Yours truly,

CURTIS C. HOWARD.

Please note that, compared with former examination of the well water, the oxygen required was reduced from 4,2 to 1,8 parts per million, and the albuminoid ammonia from 2.16 to .06 parts per million. Biological examination showed the sample of well water to be perfectly sterile, The sample of hydrant water contained 3,260 colonies per c. c.

I would recommend that a third examination be made of water from the artesian well. The different results of the two examinations previously made are of the greatest interest in the study of water analysis, and as this artesian water is so easily accessible for Lima, its fitness for use should be, if possible, positively determined.

The total solids in the second sample of artesian water were 126 parts per 100,000; and 79.6 in the hydrant water.

The total solids, are considered by some chemists to fairly measure the hardness of a water, and Prof. Howard pronounced the artesian a very hard one. Excessive hardness should not, however, condemn this supply for public use, as it would be possible to soften the water on a large scale, but I think it would be advisable to employ further tests to determine the permanent and temporary hardness of the water.

This matter of water supply is of the greatest importance to Lima, and I would respectfully recommend that the investigation should be continued.

DRAINAGE OF LIMA.

Another matter affecting the sanitary condition of Lima, is the pollution of the Ottawa river. This stream runs through a thickly settled part of the city, so that if allowed to become foul and malodorous, a large number of people would be affected. I inspected it at various points above, in, and below the city, and found it in an exceedingly filthy condition.

Above the paper mill the stream was not specially offensive to sight or smell, but from the paper mill to the limits of the city, it was filthy in the extreme. Although the weather was cool—it was the 7th of November—there was a marked disagreeable odor near the water. In hot weather, the odor is said to be very offensive, and is carried by winds over a large extent of the city. There are several sources of pollution. The paper mill empties about a million gallons of waste matter into the stream daily. Fifteen sewers discharge into it between the paper mill and McDonel street.

The number of houses connected with these sewers is not known, though there are quite a number. Just below the paper mill is a slaughter house, and all drainage from it, and at times the offal, enters the river. Waste from oil refineries also gets into the river. This forms a black, oily scum, which becomes entangled in the weeds growing at the river's edge, adding to the unsightly appearance and offeniveness of the stream. The bed of the river is rock and abounds in numerous holes in which waste matters collect and decompose.

There is very little fall to the stream at this point, higher levels being found below the city, so that, in low water, filth emptied into the stream within the city limits is retained there. The same condition of the stream, I was informed by surveyor Trussell, exists for several miles below the city, and is a source of annoyance to a number of farmers.

Property owners along the river within the city limits once brought suit against the paper mill company for committing a nuisance detrimental to health. They were defeated, chiefly on the grounds, I was informed, that it could not be proven that the pollution by waste from the paper mill was injurious to health. This suit was brought a good many years ago, and though the local board of health has attempted many times since to abate the nuisance, the conditions giving rise to it have been constantly growing worse. As long as the city empties its sewage into the river at its very doors, it is not in position to control the other sources of pollution; and it will be necessary for Lima to make some other disposition of its sewage. There are no towns using the Ottawa river for a public water supply, and if the sewage were conveyed by an intercepting sewer some distance below the city, that source of pollution would be stopped. It will be a matter of some difficulty to accomplish this.

The bed of the river, which seems to offer the most available route for such a sewer, has a very slight fall; and from surveys recently made by Mr. Trussell, at the instigation of the board of health, it would apparently be necessary to go five or six miles below the city to secure an outlet.

A suggestion made by the manager of the paper mill, might to some extent overcome this difficulty. He offered, if the city would build such a sewer, to erect a standpipe for receiving the waste water from the mill, which amounts to about a million gallons daily. As the paper mill is on a bank 40 to 50 feet above the bed of the river, by connecting the sewer with the bottom of the standpipe, a powerful head could be given to this amount of water. The pulp contained in the paper mill waste might possibly largely off-set the advantages of this plan.

It would be possible, and perhaps more economical, to lift the sewage 8 to 10 feet by pumping rather than to secure the necessary fall by channelling the bed of the river, which is of rock. If it ever becomes necessary for Lima to construct sewage disposal works, and it very probably will, a pumping station would be required; and the one suggested could be utilized for that purpose. The creek bed, without great expense, could be taken for the route of an intercepting sewer, which would deliver the sewage by gravity to a point several hundred yards below Main street, where the pump should be placed. At this point the sewage could be lifted 8 to 10 feet and a new grade for the discharging sewer be established, which would carry the sewage a sufficient distance from city limits. In the event of sewage disposal works being built, several favorable locations are to be found in the neighborhood, which would be within easy access of the pumps.

REPORT OF AN INVESTIGATION OF THE SANITARY CONDITION OF FINDLAY.

From Lima I went to Findlay. I was met by Mr. Shirtliff, health officer, Mr. Thompson, clerk, and Dr. Carrothers and Mr. Moffitt, members of the local board of health, and escorted over the city. This phenomenal city presents some very interesting sanitary features. It extends over a vast territory, much of which is unbuilt, and while retaining many of the features of a village, has had to deal with most of the problems of a city. For the disposal of night soil and garbage a crematory has been provided, which is operated by natural gas. The Engle furnace is the one in use. The plant was clean and in good order, and very little odor could be detected in the neighborhood. A full report of the crematory and its work is promised for our meeting tomorrow by Dr. Carrothers of the Findlay board of health.

Water works were built by the city in 1889. The supply is obtained from the Blanchard river, a dam being thrown across it to impound its waters. A new system of water filtration was introduced by the superintendent in charge. A storage reservoir was excavated just above the dam, and separated from the water in the river by a second dam. A series of independent filter beds, some 8 or 10 in number, extend along this dam on the side towards the reservoir. They contain layers of sand and gravel, and can be emptied and cleaned independently of each other. This is the new feature about the system. Water from the river passes through openings near the bottom of the reservoir dam and up through the filter beds into the storage reservoir. By this upward filtration the filter beds are relieved of a large amount of matter in suspension that sinks by gravity before reaching them. The superintendent informed me that he was engaged on a report of the system to be presented to the Society of American Engineers, and promised to send a copy of the report to the board.

There was but little flow in the river when I was there, and but a few inches of water below the dam. About a half mile below the dam the river is spanned by a fine bridge, which is near the central part of the city. This bridge connects Main street, which is one of their most prominent thoroughfares. The principal sewer of the city runs through this street, and empties into the river at the bridge. This sewer was intended for storm water purposes only, but quite a number of houses are connected with it, and a great many water closets discharge into it. A short distance below the bridge the sewer from the court house discharges. This sewer carries the waste from the court house w. c., which is used daily by several hundred people. About 150 yards below the bridge the river is crossed by a natural gas pipe 5 or 6 inches in diameter, the pipe being laid just above the bed of the river, and supported and protected by broken stone. This forms a shallow dam, and creates a pocket in which is received and retained the sewage discharged into the river. In addition to this, several large tenement houses, saloons and business houses, located just above and below the bridge, facing on Main street and with their backs to the river, make a dumping ground of the river bank. Several of the buildings contain water closets, baths and kitchen sinks, and discharge their waste into cesspools near the water's edge. These are constructed of loose boards, and are seldom emptied. Several of them were overflowing into the river, and were in a horribly offensive condition. There was very little water in the river during the whole of last summer, and the conditions described gave rise, during hot weather, to a most abominable nuisance in the very heart of the city. I was told that the odor was so overpowering at the bridge that persons were obliged to hold their noses in crossing it, and hundreds of persons are compelled to cross this bridge daily.

With the exception of the river the city was in a very creditable sanitary condition; streets, alleys and back yards were comparatively clean.

A meeting of the board of health was called in the evening, and I made a report. I was requested by the board to reduce this to writing for presentation to council, and for publication. The report was published in all the papers, and was as follows:

Findlay, Nov. 9th, 1891.

GENTLEMEN:—I have spent the day in looking over your city with the view of determining, in so far as can be done in the time at my disposal, the conditions which affect the sanitary welfare of your people. I have seen much to commend, and many things that can not be too severely condemned. Findlay has grown suddenly from an unimportant village to a city of large proportions, and in its rapid growth has lost sight of some of the requirements of a large city. Many of these questions, however, have been met in a manner deserving the greatest praise. Findlay can boast of the distinction of being the only city in the state in which a crematory has been provided for destroying night soil and garbage. This is an advanced step, and has been and will be of incalculable benefit.

Your water works system, which I inspected to-day, is a model in every respect. While the water supply is not an ideal one, being the surface drainage of cultivated land, it has been utilized in the best possible manner, and is purified by filtration, on advanced and scientific principles. The city presents a clean and well kept appearance in most quarters. Your board of health is composed of representative, energetic men, anxious to know their duty and do it. Some things, however, have been neglected which, if not speedily remedied, will not only injure your city's fair name, but will seriously imperil the health of your citizens. The crying need of your city is an adequate system of sewerage. Your present system has created the most gigantic nuisance I have ever seen, and I have seen some very bad ones. It is impossible to describe the conditions existing along the river near the Main street bridge where your sewer empties. It is a magazine which needs but a spark to explode to overwhelm you with pestilence. The city's sewer is not alone to blame. A short distance below it the court house discharges its sewage into the river, while above and below the bridge numerous overflowing cesspools, marked by black and horribly foetid streams, pollute the air in their course to the river. The flow of your river at the present time as marked by the overflow at the water works dam, is less than the size of a man's body, so that fully half of the water in the river at the Main street bridge is sewage.

Having had my attention called to reports that the brewery was contributing largely to the pollution of the river, and by permitting the escape of ammonia, killing the fish in the stream, I visited that establishment. The report is without foundation. The ammonia used in manufacturing ice is used over and over, and none is permitted to escape. The sewage from the brewery is the washings from empty beer kegs and from scrubbing out the cellars and contributes little if any to the pollution of the stream. The brewery itself was in very clean condition. The privy used by the employes is on the bank of the river, its contents should not be allowed to escape into the river.

The channel of the river is obstructed by stones, trees and rubbish, and also by a dam caused by a gas main crossing the bed of the river. These obstructions should be removed, but this alone will not remove the nuisance caused by emptying sewage into the river in the heart of the city. I can see but one way in which this can be done, and that is by constructing a trunk sewer to receive the sewage from the Main street sewer and the court house sewer and carry it down the river to a point below the city. If, in addition, it would be required that all cesspools and privy vaults which now overflow into the river should be connected with the sewer or be made water tight, your river would be restored to its natural state of purity and the foul blot upon your city be removed.

Another condition at Findlay should receive prompt attention. A large proportion of your people use wells for obtaining drinking water. In many parts of the city this supply is found in sand and gravel from five to six or eight feet below the surface. Privy vaults are dug nearly to, and often into this same layer of sand and gravel, and as these vaults are not watertight, there is the greatest danger of polluting these wells. The board of health is empowered by statute to regulate the arrangement and construction of all privy vaults, and should require that all vaults should be laid in brick and cemented so as to be perfectly watertight. If this matter is taken in hand at once you can protect your wells for many years to come, and undoubtedly prevent much sickness. With your sewerage removed below your city, and your privy vaults properly constructed and cared for, Findlay will be able to offer inducements for a healthy location second to none in our state.

Respectfully,

C. O. PROBST, M. D.,
Secretary State Board of Health.

The following editorial is taken from the same paper:

OUR SANITARY CONDITION.

As will be seen in our local columns this morning, Dr. C. O. Probst, Secretary of the State Board of Health, was in the city Saturday and made a complete and critical examination of the sanitary condition of Findlay on behalf of the important board which he represents. His report to the city board is printed in full in this impression of the *Republican* and should be read by every citizen. It contains information that will open the eyes of some of our unthinking people and we hope will be the means of inducing immediate steps for the important sanitary work that is needed.

He has told the truth after deliberate personal examination of the situation and we do not think there is a significant inaccuracy in his report. He has been frank alike in noting the good and bad features of our sanitary situation, and has dealt with the whole subject in an able and comprehensive way.

He has pointed out, not only feasible and practicable, but easy remedies for our sanitary evils. It has generally been believed that it would be necessary to go to great expense to get rid of our troubles in this direction. The way indicated, however, will not entail any burdensome cost upon the people, nor will any great amount of time be required for the consummation of the plans suggested.

The work ought to be done speedily to avoid all special danger to the lives and health of our people, in behalf of whom, in this regard, the utmost degree of precaution is an imperative duty. There is no need of postponement and there may be decided danger in the procrastination of what must be regarded as a known duty.

There is encouragement in the authoritative announcement in this connection that our location and natural conditions are healthful and it but remains for us to do a temporary work of renovation and complete the most ordinary provisions of sanitation to make Findlay one of the most healthful cities in Ohio. Let there be no hesitatioh in the important work.

Mr. Moffitt, of the Findlay board of health, called on me a few days ago and reported that my suggestions were being carried out. The Main street sewer will be extended about two miles down the river, and will discharge into it out-side of corporation limits. This line will be joined by a sewer which is being built on the opposite side of the river, the original plan having been to discharge this sewer into the river near the bridge. All sewage will now be kept out of the river within city limits. Bonds have been issued, and the work will be commenced in the spring.

Suit has been brought to abate the nuisance caused by cesspools along the river bank, and these measures will effectually dispose of the nuisance so greatly complained of.

Investigation of Typhoid Fever at the Catholic Orphans' Asylum at Louisville, Stark County, Ohio.

A request was received from the board of health of Louisville to investigate an outbreak of typhoid fever in the Catholic Orphanage at that place. I went there on the 2nd of December, being accompanied by Dr. Conklin, who lives within six miles of Louisville.

The asylum we found to be a large two story brick building originally intended for a school; but it has been used as an asylum for children for the past four or five years.

The inmates, at the time of our visit, were 103 male children, from 3 to 13 years old, and 11 sisters, with a mother superior. The building is located on a gentle slope terminating in an abrupt bluff 100 feet back of the main building. The basement of the main building is used for kitchen, dining room, store room and play rooms. It is fairly well ventilated, and lighted, with its floor from three to five feet below the surface of the surrounding ground. The floor was covered with matched flooring laid directly on the ground. This flooring, which had been down since the building was erected—about 30 years—was almost entirely rotted, and the earth underneath was foul smelling from being saturated with filth soaking through cracks in the flooring when it was scrubbed. The basement was dry. In the kitchen was a wooden pump, placed in a well under the kitchen floor.

The water from this well was dark colored and very foul smelling. We were assured by the sisters, however, that the well had been dry for many weeks, and that it had not been used since some time before the appearance of typhoid fever at the asylum. Just above the kitchen sink is the opening of the kitchen drain. This drain is untrapped, and extends to the hill-side back of the building some distance away. A rain water pipe from the building, emptying into this drain is intended to keep it clean. Only kitchen slops are emptied into it.

The first floor above the basement is devoted to school rooms, play-room, etc., and the second floor above to dormitories. The rooms are all heated by steam—direct radiation—are well lighted, and were well ventilated by open windows. Perfect cleanliness prevailed throughout.

The first cases of typhoid fever occurred about the 20th of October, two boys being taken sick about the same time. One of these, a boy previously in poor health, died. About one week after the commencement of these cases, as nearly as could be ascertained, no record of the cases having been kept, other cases occurred. Children continued to come down with the disease until, at the time of our visit, there had been 39 cases. Only one death had occurred, the disease being very mild in most cases, and convalescence having been established in some instances in a week to ten days. About 20 cases were in bed, and three new cases developed the day we were there. Some of the cases presented all the well marked symptoms of typhoid fever, so there can be no doubt of the character of the disease. The worst cases were being cared for in a brick building near the main building, which had been converted into a hospital.

The stools of the patients were received in vessels containing chloride of lime. The amount of the disinfectant used was about a teaspoonful to each stool, which would not be sufficient, as a rule, to secure disinfection. The stools were thrown into privy vaults. The clothes of the patients were not disinfected, except that in laundering they were said to have been boiled for some time. They were always laundried separate from the clothes of others.

None of the eleven adults about the institution had contracted the disease, except possibly one sister who had been suffering with general malaise for several days.

The water supply of the asylum at the time of the outbreak was from a dug well about 50 feet from the rear corner of the building. About 40 feet from this well, across an alley, is a stable, and was, not long since, a pig pen, said to have been very filthy. The privy vaults of the asylum are about 75 to 80 feet from the well, and another vault belonging to a neigboring house is within this distance. Many years ago the privy vaults of a school house were located within 80 feet of the well, but these were filled up and abandoned long ago. The Catholic cemetery, now abandoned, is about 300 yards from the well. This cemetery is on a hill side draining from the well. The dip of the rock strata found in that locality, according to data furnished by Dr. Schilling, a member of the local board of health, corresponds with the surface slope, which would render pollution of the well from the cemetery very improbable. The surface around the well slopes from the backyard and main building towards the well, and as the well is covered with loose boards, admitting a pump, considerable surface drainage must enter it.

The well is 35 feet deep, is walled with brick, uncemented, and a tub is at the bottom of the well in which the pump is placed. The well was cleaned out a week or ten days before our visit, and this tub was said to have been found full of filth. The soil is sand and gravel with a thick layer of clay, beneath which the supply of the well is found.

This well was condemned by Dr. Beucler at the time he was called to the first cases taken sick, and the Mother Superior is confident that it was not used thereafter. The pump was left in place, however, and it is at least possible that the well was surreptitiously used. On abandoning this well, water was obtained from a well back of the public school building, immediately across the street, and about 200 yards from the asylum. This well, containing a pump, is protected from surface drainage, and is used by the school children and by several families in the neighborhood. There were no cases of typhoid fever among those using this well except at the orphans' asylum. There were in fact no other cases reported in the village, although the son of Dr. Beucler had had the disease some weeks prior to the outbreak at the asylum. About two years ago a considerable number of cases of typhoid fever occurred in the village, but these were confined to a district remote from the asylum.

The children at the asylum were not allowed to leave the premises without permission, but were sometimes sent on errands about town. The children first taken sick had been at the asylum for sometime, and could not have contracted the disease elsewhere.

Cases continued to occur, and January 12th Dr. Beucler reported that there had been in all 64 cases, including one sister. All the patients were convalescent at that time except one, and there had been no new cases for some time. There was but one death.

No satisfactory explanation can be given of this endemic. The cause must have been local, all of the cases being confined to the inmates of the asylum. The disease was not imported. There is no sewerage about the building except the kitchen drain, so the disease was not due to bad sewerage. The well in use when the disease broke out was undoubtedly polluted. Cases continued to occur for two months after the well was abandoned, though we cannot be sure that the children did not continue to drink the water, as it was at all times possible for them to do. The well at the public school building could not have been infected, as no cases occurred among two or three hundred school children and several families using it. We cannot be certain that the stools were in fact disinfected by the quantity of chloride of lime used—a teaspoonful: but they were promptly removed and emptied into privy vaults. It is possible that these typhoid stools, which very probably were not disinfected, were cast upon the sides of the privy vaults where drying would liberate the typhoid germs and permit them to infect the air of the privies. This, though possible, is scarcely probable. There was a bad state of affairs in the basement, the floors of which had completely rotted, and beneath which the earth was exceeding foul. But the floors were not disturbed until after the disease broke out; and we have no good reason for believing that such conditions originate typhoid fever. The milk supply was closely scanned. We were told that there were no cases of the disease in the family of the man who furnished the asylum with milk; and furthermore he supplied a large number of families in the village, in none of which were there cases of typhoid fever. Viewed from any side the cause of the endemic is involved in darkness.

One case of scabies was found in a boy suffering with typhoid fever. He was in a bed in a room containing a number of patients. We advised immediate isolation of this case.

A new water supply was recommended; and a drilled well below an impervious stratum, where water, we were informed, could be found, was advised. Brick had been secured for paving the playroom in the basement. We advised that the brick should be set on edge with joints filled and made tight with pitch or asphalt. The dining room in the basement we recommended should be floored with oak, resting on joists, with provision for ventilation beneath the floor. Instructions for the proper disinfection of stools and clothing were given to the nurses and to the Mother Superior; and we also advised that the pump in the asylum well should be removed or chained.

Our recommendations and instructions, we were assured, would be fully carried out.

REPORT OF AN INVESTIGATION OF TYPHOID FEVER AT LYKENS.

In accordance with instructions received at the last meeting I went to Lykens on October 31st, where I met Dr. Virtue, the only physician in the place. The village, if it may be called such, is a group of 20 to 25 houses containing 90 to 100 people. The country around is rolling farm land, a small stream flowing past the village.

Fifteen cases of typhoid fever—about one in every six of the population—had occurred there since the last of August, and eleven cases were under treatment by Dr. Virtue.

The general history of typhoid fever in Lykens, so far as could be learned from inquiries of the citizens, is as follows: About 12 years ago quite a number of cases of the disease occurred in the village and surrounding country. The village was thereafter free from the disease until the fall of 1887. At that a Mrs. Zellner, living on a farm 4 or 5 miles from Lykens, contracted typhoid fever. The origin of her case could not be learned. A female servant in this family contracted the disease and went to her home and died. A second and a third female servant were employed by the family, and both contracted typhoid fever and died. A married son and a married daughter of Mrs. Zellner, who were nursing her, also took the fever and carried the disease into their homes. Mr.

Mitchner, who lives in Lykens, worked for the son, and he was taken with typhoid fever and went home. His case was the so called "walking typhoid fever" and was not recognized for sometime. No precautions were taken to disinfect or care for his stools, and it seems probable that he introduced the disease into the village. Other cases occurred in the village that fall, and have continued to occur each fall thereafter. By the kindness of Dr. Virtue I was able to see all of his cases, and to interview some families in which cases had previously occurred.

The first case to occur last fall was Harry Mitchner, aged 10, an only child living with his father and mother. He was taken sick August 23d. He had visited the Eastman family who live in the country, about two weeks before, but could not remember that he drank water there. There was no typhoid fever in the Eastman family at that time, but cases subsequently developed there. The Mitchner family were using water from a well at Englert's, a case of fever occurring in this family October 16th. Mr. Mitchner, as previously stated, had typhoid fever about four years ago, when the disease was possibly carried by him into the village.

The second case was Frank Metzner, a man about 50. His case was a very severe one, being complicated with hemorrhage and large bed sores. He had worked at various places about the village and neighboring country, and had drank water from numerous wells. The sanitary condition of his dwelling was very bad. The well was located a few feet from the kitchen door, and the surface drainage of the back yard was towards the well. A shallow trench back of the house would carry slops thrown at the kitchen door within two feet of the well. Diarrhoea was a prominent symptom in this case, the stools often being passed in bed. Soiled cloths and bedding were washed at the kitchen door, the wash water being thrown upon the ground in the back yard, and very probably reaching the well. The family continued to use the well in spite of the warnings of the physician. The mother, I was told by an intelligent neighbor, had been known to stop her washing of soiled clothing and, without washing her hands, attend to cooking, bread making, etc.

There were five children in this family, and the day I was there three of them, and both father and mother, were in bed with the disease. Esther, aged 12, was taken sick October 21; Emma, aged 2, on the 25th; Rachel, aged 9, on the 26th; and Mrs. Metzner, aged 45, on the 27th. Two boys, 15 to 18, escaped, although I saw them drinking water from the well spoken of.

The third case in point of time was Lawrence Laipply, aged 9, taken sick September 10th. This boy died, the only death that had occurred. The stools in this case were treated with copperas and buried about 100 feet from the well used by the family. This family consisted of father, mother and five children. Ida, aged 12, was taken sick September 17; Cora, aged 4, September 19th, and Mrs. Laipply, October 25th.

The other cases were Susan Blin, aged 17, and Pearl Blin, aged 4, in a family of seven. Susan was taken sick October 15th, and Pearl October 20th. The Blin family obtained water from a new well which they commenced using one week before Susan was taken sick. Both Susan and Pearl, however, had drank water from other wells about the village.

Alice Barnhart, aged 6, was taken sick October 23. This family consisted of two adults and five children. The well in use was about 60 feet from two privies. The stools of Susan Blin, who lived next door to this family, were buried about 100 feet from this well.

Mrs. Englert, aged 26, was taken sick October 16. The well at this house contained very bad, foul smelling water, and was abandoned on this account about three weeks before Mrs. E. was taken sick. Water was then obtained from a neighbor's well. There were two adults and two children in this family. One child presented many of the premonitory symptoms of typhoid fever when seen October 31.

Mrs. Ehlert was taken sick October 20. There were four persons in this family, and four persons living in another part of the house. Water was obtained from a well at the kitchen door. A death from typhoid fever occurred in the adjoining house one year before.

The soil formation in and around Lykens is a loose loam, underlaid at a depth of 8 to 9 feet with a thick bed of quicksand in which the water supply of most wells is found. Water flows through this quicksand almost like through a sieve, and the wells are all more or less polluted. It is the custom of the farmers in the neighborhood, and of the people in Lykens who have gardens, to manure the land heavily, and no doubt large amounts of organic matter reach the wells, fitting them for culture beds for the germs of infectious diseases which perchance may reach them. Previous to last fall there was no attempt to disinfect the stools of typhoid patients; and copperas, mixed with lye water in some instances, was being used for a disinfectant in the cases I have reported. The stools were thrown into privy vaults or were buried, but in either case, owing to the loose nature of the soil, the germs of typhoid might easily gain access to the water table in the quicksand, and then could reach wells at unknown distances. The long dry spell which prevailed prior to the cases last fall would concentrate the impurities in the wells, and also increase their circle of drainage. These conditions, in my judgment, are responsible for the continued prevalence of typhoid fever in Lykens and neighborhood.

At the request of Dr. Virtue I made him a report of my visit, attributing the disease to the causes given, and recommended, to quote from this report, "that all wells now in use be permanently abandoned, and either cisterns, or wells substituted, drilled into the water bearing rock which I am told, is to be found under a bed of clay which underlies the quicksand. For the present no one in the village should drink water that has not been boiled; boiled water is perfectly safe.

"Strict attention must be paid to disinfection, full directions for which are contained in the pamphlets on "The Prevention of Typhoid Fever" which I have sent you for distribution."

Dr. Virtue promised to make a full report of all cases that have occurred in Lykens and vicinity during the last four years. His report has not yet been received.

The recommendations for legislation, contained in my last report, were submitted to Prof. Nelson, who was appointed chairman of the legislative committee, Drs. Conklin and Scott being associated with him. The recommendations were approved. Arrangements were made with the supervisor of public printing to print 1,000 copies of advance sheets of our report; this has been done, and they are now ready for distribution. Only about 100 copies of our last annual report remain on hand. Requests for reports of the Board are becoming quite frequent, especially from persons in other states. We did not have enough copies of the last report to supply the demand in our own state, so I have been obliged to refuse copies to persons outside. We will be allowed 250 additional copies this year, not including the 1,000 copies of advance sheets.

All arrangements have been completed for the joint meeting of the state and local boards of health, to be held January 28th and 29th.

The number of subscriptions for sanitary journals should be determined at this meeting. I desire to enter a plea for the setting aside of not less than $200 each year for the purchase of books and reports for the library which cannot be obtained by exchange. The necessity for a good library need scarcely be urged.

The rules requiring reports of deaths and infectious diseases in public institutions, adopted at the last meeting were printed, and a copy was sent to the Superintendent of each state institution, and of each county infirmary and children's home. The following state institutions have reported: Insane Asylums at Columbus, Dayton, Cleveland and Athens, the Soldiers' Home at Sandusky and the Orphans' Home at Xenia. Reports have been received from Children's Homes in nine counties, and from forty County Infirmaries.

I would recommend that the investigation of State institutions, commenced two years ago, should be continued.

Only a brief reveiw of the correspondence of the office for the quarter will be made.

A letter was received from Dr. Weitz, of Montpelier, stating that several persons were supposed to have been made sick from eating headcheese. A sample of the cheese was received. I referred the sample to the Dairy and Food Commissioner, and it was examined by Prof. Weber, who reported that no foreign or injurious substance could be found.

A letter was received from Dr. Smith of West Milton, reporting cases of scarlet fever in the village, and stating that there was no health officer to look after them. I wrote to the board of health of West Milton, requesting that a health officer be appointed at once. The appointment was made.

Dr. Biggs, health officer at Glendale, reported one case of small-pox on November, 19. I wired him at once for particulars. He telegraphed that the patient was quarantined, and there was no danger of spread. He subsequently furnished the following report of the case:

GLENDALE, *November, 24th.*

DR. C. O. PROBST,

DEAR DOCTOR:- My delay in sending you a history of the case of small-pox reported to this office, was occasioned by the fact that, up to last night, we have been unable to trace its origin. I now feel very confident that the contagion was carried by the mother of the child who is affected, from Cincinnati. A few days before the child was taken sick, she visited friends in Cincinnati who live in a vicinity where there is a case of the small-pox, and there being no small-pox in Glendale or vicinity I therefore feel positive that it was brought here as above described. The patient affected is a female child, white, German, eight years old, and of robust constitution. The case is a very mild one, and is doing nicely. It was reported to this office by Dr. Mussey, November 15th, 1891. He, at my request, resigned it to the care of the health board. I think there is very little danger in its becoming epidemic, for we have isolated the case, and allow no one to leave or enter the house but myself, and I take every precaution. All the school children, and the majority of adults in Glendale have been vaccinated.

Any further information you desire, I will be most happy to furnish.

Respectfully yours,

T. J. BIGGS, M. D., H. O.

A communication by telephone was received from Dr. Reed, health officer of Mansfield, asking if the rules of the state board of health would prohibit conveying the body of a child dead of diphtheria from Mansfield to Norwalk, the body to be taken in a hearse. I replied that it was doubtful whether the rules referred to, would apply to conveying a body overland by hearse, but that the statutes required that permission be given by the boards of health of Mansfield and Norwalk. The undertaker took the body to Norwalk without a permit, and was arrested for violating the rules of the board of health of Mansfield, and section 2119 R. S. The case is still pending.

A letter was received from Dr. Jenkins, health officer of Plain City, in regard to the shipment from Columbus to Plain City of the body of a child reported to have died from diphtheria. I learned that the cause of death given by Drs. Agler and Dunham of this city, was "heart failure resulting from rheumatism." The physicians admitted, however, that the child had had diphtheria three weeks previous to death.

A letter was received from Dr. Reed. of Mansfield, reporting that the body of a child that had died of diphtheria, had been shipped to a village near Mansfield, and that several cases of diphtheria had occurred in consequence. An investigation revealed the following:

Clara Wise, daughter of Jefferson Wise, living at Cookton, was treated for diphtheria by Dr. M. T. Love, health officer, of Shelby. The child, not yet recovered, and contrary to the advice of Dr. Love, was taken to Gibsonburg, where she died about a week later. This was on the 29th of October. The body was shipped on the following day to Spring Mills, a small town on the N. W. O. Ry., and was received by Andrew Wise, grandfather of the child. The body was kept from Friday until Sunday, when a public funeral was held. Two daughters and a daughter-in-law of Andrew Wise, the latter living in Mansfield, contracted the disease, and one daughter died November 19. In December Dr. Reed, of Mansfield, wrote me: "The fourth case has occured from that Wise infection and still more likely to follow, as it has broken out in a tenement house where there are several families of children who are poor and dirty. The following is a copy of the stub of the transit permit that accompanied the child, the permit itself having been removed from the box before it was taken charge of by the undertaker. It is claimed that the mother of the child secured the permit.

No.......2......

COPY.

TRANSIT.

"Stub to be retained by official issuing Permit."

TRANSIT PERMIT.

1. Issued to.....................Pennsylvania Co...
2. Name of Deceased........Clara Wise...
[If a minor, give parents's names,]
..........J. T. & Mary Wise...
3. Interment at................Spring Mills, O......................................
4. Date of Death,.............Oct. 29.........Age......10................................
5. Place of Death,............Gibsonburg, O..
6. Cause of Death,...........Paralysis of the Heart................................
7. Certified by...................N. B. Ervin ....
....N. B. Ervin. ....M. D.

Mr. R. G. Bentley, general baggage agent of the P. C. C. & St. L. Ry., of which the N. W. O. is a branch, wrote me: "Our agent at Gibsonburg advises me that there is no one authorized to issue permits under the state board of health rules in that town." But there has been a board of health in Gibsonburg for about two years, and Mr. W. M. Brown, the health officer, informed me that the board of health was not asked to issue a permit for the transportation of the body of Clara Wise, and did not do so.

Following is a copy of the death certificate accompanying the body, as furnished by Mr. Bently:

"This is to certify that this corpse, daughter of J. F. Wise, died of paralysis of the heart, and that it was not a contagious or infectious disease."

(Signed)

N. B. ERVIN, M. D.

The following letter was received from Dr. Ervin:

GIBSONBURG, OHIO, *December 16th, 1891.*

C. O. PROBST, *Secretary, Columbus, Ohio.*

DEAR SIR:—Yours of the 14th inst. at hand. In reply will say that I gave a certificate of cause of death of a child of a Mr. Jeff. Wise of this place. The cause of death was "heart failure." I never saw the child but once before her death and the people had but recently moved here, and at the time, I could not get much of a history of the case from the parents; but I have learned *since* that the child had had an attack of diphtheria some three or four weeks previous to the time of her death. At that time there was no evidence of any diphtheritic trouble. The parents say the child was sick about five days, with what the attending physician called diphtheria, but was not confined to her bed at any time, and was discharged by the doctor ten days before moving here. She was here about ten days before she died.

That is as far as my knowledge of the case extends. I know nothing of the Dr. Farrell to whom you refer, as there is no doctor here by that name. Hoping this will prove satisfactory, I am,

Yours very truly,

(Signed)

N. B. ERVIN.

No action has been taken in the matter, as I thought it best to first present the facts fully to the Board.

Information was received that a number of cases of diphtheria had developed at the Soldiers' and Sailors' Orphans' Home at Xenia. I referred the matter to Dr. Sharp, and was instructed to visit the Home and report. The following report was made to Dr. Sharp:

COLUMBUS, OHIO, *December 16, '91.*

DR. H. J. SHARP, *President of State Board of Health, London, Ohio.*

DEAR SIR:—According to instructions I visited the Soldiers' and Sailors' Orphans' Home at Xenia and made an investigation of the cases of diphtheria there. I found eight cases in one of the new cottage hospitals, six of which weresaid to be diphtheria; the other two were suspected cases, and had been placed in the hospital to await developments. In another cottage hospital, eleven patients were found suffering with sore throat, which was not considered to be diphtheritic by the Home surgeon. In the old hospital there were probably a dozen or more chidren who were also suffering with sore throat. The symtoms, according to Dr. DuPuy, were fever—101-102 degrees, lasting four or five days, redness of the fauces and swelling of the tonsils. No false membrane found in any of the cases. In this same hospital—the old one—were found three children suffering with pneumonia, one with necrosis, and several who had been recently received, and were being quarantined. Since the first case of diphtheria, which occurred last July, there have been, according to the surgeon's report, fifteen cases of diphtheria and four deaths. No new cases have occurred since December 1st.

The Home is suffering with an epidemic of mumps, there having been some 75 to 80 cases. No attempt is made to isolate these patients.

The sanitary condition of the Home is good. The cottages have recently been repainted. The old board walks which connected the cottages have been replaced with stone. A layer of concrete and asphalt has been placed completely around each cottage, sloped so as to protect the foundations from surface water. Excavations were made under each cottage, and good ventilation under them secured. The cottages were dry and clean. The new wells furnish a very pure water, which is laid on each cottage; and the connections at the pump house are such that no other supply can be delivered to the cottages. Great care is being taken to prevent contagion. New arrivals are sent to the quarantine hospital, and their clothing is disinfected, a complete change being given them. Visitors are not allowed to visit the cottages without a permit. A daily inspection is made of the throats of all children by the matrons. The cottages are disinfected (?) once or twice a week by burning a small amount of sulpher in them while the children are at school. These measures, it is claimed, have been strictly enforced during the past year.

The criticisms I have to offer are that children suspected to have diphtheria should not be confined in a hospital with those undoubtedly affected. Some provision should have been made for the quarantine of cases of mumps. The fumigation, as now practiced, is probably useless for the prevention of disease, and possibly injurious to the health of the children.

I should mention that a number of the employes are suffering with la grippe, but the children have mostly escaped.

Respectfully,
(Signed)
C. O. PROBST, *Secretary.*

SPECIAL MEETING, FEBRUARY.

At a call of the president, a special meeting of the Board was held in Columbus, February 24, 1892, the object being to consider the report of a committee appointed to prepare amendments to the health laws of the state.

There were present: Drs. Sharp, Hoover, Miller, Conklin and Prof. Nelson; also Mr. Hunter, of Warren, and the Attorney-General.

Dr. Sharp, president, called the meeting to order, and stated its object. Mr. Hunter, as chairman of the committee, was called on to report. Mr. Hunter said that the committee consisting of Dr. Church, of Salem, Dr. Reed, of Mansfield, Dr. Probst, secretary of the state board of health, and himself; had had two meetings, and had agreed to recommend the bill which he presented for the adoption of the state board of health.

On motion it was voted to take up the sections separately for consideration.

Each section was fully discussed by the members, and by Mr. Hunter and the Attorney-General, and the bill as amended was adopted by the Board.

As the time for adjournment of Legislature was near at hand, it was voted to postpone its introduction until the next session of Legislature; and the secretary was instructed to have the bill printed and send a copy to each board of health in the state, requesting that any amendments deemed essential, should be submitted in writing to the secretary of the state board of health. There being no further business the Board adjourned.

MINUTES OF THE APRIL MEETING OF OHIO STATE BOARD OF HEALTH.

The State Board of Health met in regular session at the Burnett House in Cincinnati, Ohio, April 27th and 28th, 1892. The meeting was called to order at 7 p. m. Present, Drs. Sharp, Conklin, Miller, Stanton, Wise and Hoover. Dr. Sharp, president, in the chair. On motion a recess was taken until 9 a. m. of the following day, April 28th.

SECOND SESSION.

The Board convened at 9 a. m., Dr. Sharp presiding. Present as before.

The minutes of the last regular meeting held in January, and of a special meeting held in February, were read and approved.

The secretary presented his quarterly report, which was approved and ordered filed for publication.

The president announced that it would be in order to adopt a question to be proposed for discussion at the meeting of the National Conference of State Boards of Health, to be held in Lansing, Michigan, June 6th, 1892. After some discussion the following question was adopted:

"What measures can be enforced to prevent the spread of infectious diseases in rural districts."

Dr. Hoover presented following resolution, which, on motion was adopted.

> *Resolved:* That this Board congratulates the board of health and citizens of Columbus upon securing a garbage crematory and considers this important action as additional evidence of increasing appreciation of sanitary regulations.

Dr. Sharp made a report of a case of peculiar eruptive disease which had come under his observation. and stated that mischief was being worked in his city by the opinion entertainted by many people that scarlet rash was entirely disinct from scarlet fever, and not dangerous.

The secretary presented a communication from Mr. Burroway, of Cleveland, who requested permission to remove the remains of his daughter from Cleveland to Canton, the cause of death having been diphtheria. He stated that the remains were in a receiving vault in the cemetery at Cleveland, and that if allowed the body would be taken overland by hearse. A certificate from the shipping undertaker that the body was encased in a hermetically sealed casket, was read, and also letters from the health authorities of Cleveland and Canton, consenting to the removal of the body. On motion the request of Mr. Burroway was granted.

Mr. Gerstle, of Cincinnati, secretary of the Funeral Directors' Association of Ohio, was introduced, and addressed the board on the subject of a meeting of the State Board of Health and Funeral Directors' Association. A program for this meeting was agreed upon.

Dr. Miller introduced the following resolution, which, on motion, was adpoted:

> *Resolved*: That the State Board of Health condemns the practice of placing the remains of persons dying from an infectious or contagious disease in public receiving vaults and requires the immediate burial of such remains.

Dr. Sharp, chairman of the committee appointed to investigate the pollution of the Ohio river, presented a partial report, with reference to the water supply of Cincinnati, and asked for further time. On motion of Dr. Stanton, as amended by Dr. Hoover, it was voted to receive the report and grant the committee further time, with authority to continue the investigation.

Dr. Hoover offered the following resolution, and moved its adoption:

> *Resolved*: That the State Board of Health respectfully calls the attention of the trustees of the Ohio state university to the importance of education in hygiene, and to the fact that such a department has been established in the university of Pennsylvania. And be it further
>
> *Resolved*: That this board urges upon said trustees the early establishment of a department of hygiene, properly equipped, in the Ohio state university.

It was voted to send the secretary to the next meeting of the National Conference of State Boards of Health as a delegate of the Ohio Board.

At the request of the secretary, Dr. S. P. Wise was appointed associate editor of the *Monthly Sanitary Record.*

The secretary stated that the local boards of health in some of the smaller towns had reported much difficulty in enforcing a rule requiring placarding of houses containing infectious diseases, and suggested that a rule to this effect should be adpoted by the State Board of Health. This question was discussed by all the members, and by Dr. Prendergast, health officer of Cincinnati, who was invited to speak on the subject. Dr. Prendergast stated that placarding was only enforced in Cincinnati in cases of small-pox. After further discussion the secretary was instructed to present a rule for placarding houses, at the afternoon session of the board.

Dr. G. C. Comegys, of Cincinnati, was introduced, and addressed the board on the subject of a national department of health.

Dr. Hoover presented the following resolution, which was adopted, and the secretary was instructed to send copies to the trustees of the city hospital and to the mayor and the city council.

Resolved: That the State Board of Health, recognizing the difficulties attending the restriction of contagious diseases in the city of Cincinnati, urgently recomends the establishment of an isolation hospital for such diseases.

Adjourned to 2 p. m.

THIRD SESSION. 1:30 P. M.

Present—as before, Dr. Sharp in the chair.

The secretary presented a report on the sanitary condition of the county infirmaries, based on replies to questions propounded to the superintendents of these institutions. The report contained a recommendation that a properly illustrated circular on the disposal of night soil and liqdid wastes be prepared and sent to the superintendent of infirmaries. On motion the secretary was instructed to prepare such a circular.

The following rule for placarding houses containing cases of small-pox, diphtheria and scarlet fever was adopted:

RULE—When notified of the existence of a case of small-pox, diphtheria or scarlet fever, it shall be the duty of the local board of health or other health authority to immediately cause a notice thereof to be posted in a conspicuous place on the building within which said disease is contained. Said notice shall remain until removed by the proper officer.

Dr. Miller invited the board to hold its September meeting in Cleveland. On motion it was voted to hold a joint meeting of the Board and superintendents of public schools, in Cleveland, in September, and the secretary was instructed to arrange a program. On motion the Board adjourned to meet in Columbus, June 1, the following day to be devoted to a joint session of the board and the Funeral Directors' Association of Ohio.

REPORT OF THE SECRETARY PRESENTED AT APRIL MEETING.

MR. PRESIDENT:—Your Secretary begs to offer the following report for the first quarter of 1892:

After adjournment in January, I consulted the Attorney-General in regard to the prosecutions for violations of the rules of the Board regulating the transportation of dead bodies. He said the results of prosecution were uncertain; and inasmuch as the board was going to ask Legislature to amend the health laws, he advised against bringing action.

A copy of the resolution adopted by the board with reference to a National department of health was sent to each member of Congress from Ohio, with a request to support a bill for that purpose.

As a special committee was appointed to amend the health laws nothing was done with the bill adopted by the Board providing for the creation of local boards of health in townships, nor the one regulating the transportation of dead bodies.

The bill amending the health laws, as adopted at the special meeting, was printed in convenient form, and a copy was sent to each local board of health in the state, along with a circular letter requesting that the bill be presented at a regular meeting of the board, and any changes deemed advisable submitted in writing to me. I have received amendments from about twenty boards of health.

According to the last census report, as published by the Ohio secretary of state, there are (or were a month ago) ninety villages in Ohio of 500 or more inhabitants that had failed to establish a board of health.

Accordingly, during April, the following letter was written personally to the mayor and council of each of these places:

April 11, 1892.

To the Mayor and Members of Council.

GENTLEMEN:—We have failed to receive a report from you of the appointment of a board of health in your village.

Your attention has previously been called to the law requiring council to establish a board of health in each city and village of 500 or more inhabitants, and we desire to know why this law has not been complied with.

It has been decided in the courts that the provisions of this law are mandatory, and that councilmen are liable for failing to establish a board of health.

The great majority of villages of the required population have appointed boards of health, and we trust you will do so at once.

We send you a manual of health laws, and refer you to sections 9, 10, 11, for directions for establishing a board of health.

Please notify us as soon as the board is appointed, and send the name of the health officer.

Very respectfully,
Secretary.

Twelve of the ninety answered that they did not come under the provisions of the law, either by being unincorporated or by not having the requisite population. To those reporting a population less than 500 I wrote again, saying that the Attorney General had given an opinion that any incorporated village regardless of size, could legally establish a board of health.

This matter was taken up less than three weeks ago, but about ten additional boards of health have already been secured.

Dr. Woodruff, of Alton, called on me March 22d, and requested me to see a case with him at Alton which he suspicioned was varioloid. I saw the case that afternoon with him and Dr. Norris, of Alton. The patient, a man about 30, presented an ill-defined papular eruption, sparcely spread over the entire body, with a few vesicles here and there. The fauces were reddened, and one point of eruption appeared on the uvula. There had been a slight elevation of temperature, but no fever when I saw the patient.

We agreed that the case was suspicious, and quarantined the man and his family. I had taken fresh vaccine matter with me, and vaccinated the man's wife and two children.

Several days later Dr. Woodruff informed me that he was satisfied the case was not varioloid, (though he was not clear as to its nature), and as the doctor is a very careful and skillful physician, and is acquainted with small-pox, I wrote him that quarantine could be raised. No other cases followed.

I might remark, parenthetically, that of ten vaccine points received fresh from the Chicago vaccine farm, all failed, although four were used for primary vaccinations.

April 1st, Dr. Sharp called me to London to see a case that presented some symptoms of small-pox. The date was suspicious (April 1st), but as the doctor does not bear the reputation of being a practical joker, the call, I thought, was *bona fide*. We concluded that it was not small-pox, but the case presented such interesting features that I trust Dr. Sharp will make a report of it.

Mr. Nunn, president of the Funeral Director's Association of Ohio, called on me, and requested me to present a paper at the meeting of their association, June 1st. I suggested that arrangements be made for a joint session of their association and the State Board of Health. The proposition was accepted with enthusiasm and Mr. Gerstle, of Cincinnati, secretary of the Association, will meet the Board at this session and arrange for the program.

An association of the master plumbers of Ohio was organized in Columbus last March. One of the main objects of the association is to prevent the introduction of dangerous plumbing and to have plumbing inspection made general for the state.

They are in favor of placing this in the hands of the local boards of health, and I was called upon to address them on this subject. I assured them that the state board of health was in close sympathy with the movement to secure safe plumbing, and suggested that it might be possible to incorporate such legislation as they were seeking in the bill the State Board of Health had in hand for amending the health laws. They appointed a committee on legislation to consider this matter. I would say, however, if it should appear that their demands would over-load our bill, that no pledges have been made which cannot be honorably receded from, as I promised simply that the board would consider the matter.

REPORT OF INVESTIGATION OF COUNTY INFIRMARIES.

With the veiw of learning the sanitary condition of our county infirmaries, the following circular letter and list of questions was sent to the superintendent of each infirmary in the state:

STATE BOARD OF HEALTH, OFFICE OF THE SECRETARY.
COLUMBUS, OHIO,

To the Superintendents of County Infirmaries

DEAR SIRS:—We desire to institute an inquiry into the sanitary condition of our county infirmaries. A personal visit to each of them was contemplated, but as it was found impossible, we trust you will kindly furnish us the necessary information. This investigation we hope, will enable you to secure changes in your respective institutions which will lessen the amount of sickness, and consequently the expense, you have to deal with, as the report from each will receive careful consideration by our board, and where insanitary conditions are found, plans for making necessary changes will be recommended.

You will, therefore, please answer the following questions as fully as possible; and, as the State Board of Health will hold a meeting the latter part of April your report should be made at once. *Answer all questions by number* on the sheet enclosed herewith.

Respectfully,
C. O. PROBST, M. D., *Secretary.*

1. Give a general description of the location and construction of the building.
2. Number of inmates—male.............................., female..........................
3. Number suffering with disease, and the character of each case.
4. Size of sleeping rooms; number of beds, and number of occupants in each room.
5. How is the building heated and ventilated?
6. Are sleeping and living rooms sufficiently well ventilated?
7. What is the source of water supply for drinking and culinary purposes?
8. If from a well, state whether dug or driven; depth; character of soil; how protected from surface drainage; distance from privy vault, cess-pool, pig-pen stable, or other source of pollution.
9. If a spring or other source of water supply is in use, state whether liable to pollution, and in what manner.
10. What disposition is made of night soil (human excrement)?
11. If a privy vault is used, state—
    - (*a*) Whether lined and cemented so as to be water tight?
    - (*b*) Size and depth of vault?
    - (*c*) Character of soil in which it is dug?
    - (*d*) Has the vault an outlet, and, if so,
    - (*e*) Where does it discharge?
    - (*f*) What is the present condition of vault (fullness, odor, etc.)?
12. What disposition is made of kitchen slops, bath water, wash water, etc.?
13. If a sewer is used, state size, length, material, and place where it discharges.

14. Does the sewer or drain connected with it enter the building? Is it trapped? Are bad odors from sewer or drain ever noticeable in the building?

15. State fully any other conditions about the institution which may injuriously affect the health of the inmates.

It would, doubtless, have been much better to have addressed the inquiry to health officers, but as all of the infirmaries are located at some distance from incorporated towns, and some of them entirely beyond the reach of a health officer, I decided to ask the superintendents of these institutions for the desired information.

Sixty-three of the eighty-eight counties have reported to date. The inmates in this number of infirmaries, at the date of inquiry (March, 1892), numbered 5,031, of which number 2,881 were males, and 2,160 females. The least number, 8 males and 9 females, was reported in the infirmary of Pike county, and the greatest, 220 males and 105 females, in that of Hamilton county.

Naturally we could not expect to obtain definite information in regard to the nature of illness of inmates; 44 of the 63 reports, however, state definitely the number sick, and the character of illness. There were 431 reported sick in these 44 institutions, counting insane and epileptic, of which there were 54 of the former and 75 of the latter.

The reports show that, judging from the size of the sleeping rooms and number of occupants for the same, many of these institutions are greatly overcrowded. The largest dormitory rooms in the Carroll county infirmary are 12x14 feet.

These rooms have six occupants, which, if we allow for 10 foot ceilings, would give an air space per capita of 280 cubic feet. These rooms have no ventilation except windows.

In Clinton county, in rooms 12x14 there are five occupants, giving 360 cubic feet per capita. The same conditions, viz: 360 cubic feet per capita are found in Coshocton county.

Henry county, in a room 20x18, has fifteen occupants—with 12 foot ceilings the cubic air space per capita would be but 288 feet.

In Franklin county six occupants are, in some instances, placed in rooms 12x14, giving 280 cubic feet per capita.

Jackson county, in a dormitory 15x21, has ten occupants, giving 315 cubic feet per capita. As these sleeping rooms are all unventilated the air must become exceedingly foul.

In forty-four of the sixty-three institutions steam heating is used; stoves and grates in nineteen; hot air furnaces in seven, of which number three are the Smead system.

The water supply in forty-seven infirmaries is from wells, in fifteen from springs, in four from cisterns, and five get water from city water works.

Excrement is disposed of, in thirty-three of the institutions, by the privy vault system; in fifteen, water closets connected with sewers or cess-pools are used; in eight instances the privy is constructed over a stream of running water, and in one instance over the sewer; in five, boxes with dry earth are used; in two institutions there are privies without vaults, and in one (Hancock county), Smead's dry-air system is in use.

In studying the question of the liability of the water supply to pollution we find some bad examples of the practice of locating the privy and well conveniently near together. For instance—at Carroll county infirmary a driven well 93 feet deep is 63 feet from a cess-pool.

In Champaign, a well 40 feet deep, in clay soil, is within 150 feet of an uncemented vault 14 feet deep.

In Darke county, the well, twenty feet deep, is 100 feet from the privy vault, twelve feet deep, and 150 feet from the pig-pen. The vault is lined with brick, but is uncemented. A clay soil is found here.

In Fulton county the well, eighteen feet deep—nine feet quicksand—is 100 feet from the privies, which are holes in the ground—depth not given.

In Holmes county the well,driven sixty-two feet in sandy soil, is 100 feet from the privy vault. The vault has cement bottom, but stone sides uncemented.

In many others the wells are within 100 to 150 feet of privy vaults, which are uncemented.

The worst conditions in this respect are found at the infirmary of Lawrence county. Here a driven well, in sandy soil, ninty-six feet deep is 125 feet from the privy, which has a vault or well uncemented, sixty-five feet deep, five feet at the top and eight feet at the bottom. This vault or privy well is reported as half full.

In Scioto county the same conditions are found, the less exagerated. The well—thirty feet deep, in sand and gravel, is about 300 feet from the privy vault, which is thirty to thirty-five feet deep.

This outrageous practice of digging vaults down to the water level in order to have the contents drain freely away, obtains, in many places in Lawrence and Scioto counties, and, when wells are used for the water supply, is fraught with great danger.

It would be highly desirable, in my judgement, for the board to take up this question of disposal of night-soil and liquid wastes in these institutions, and by a properly illustrated circular to recommend suitable plans for this object.

In this connection I would refer to plans for this purpose which are published in the last report of the local government board (England), which are calculated for houses connected with sewers, but having no public water supply, the ordinary household slops being utilized to flush the water closets.

Another plan to be suggested along with this is a small, water-tight cess-pool, to receive all wastes, and to be automatically siphoned into superficially laid open-jointed porous, drain tile, depending on vegetation to utilize all organic matter.

In my circular letter of inquiry as to the sanitary condition of these institutions I promised that the board would give attention to sanitary evils found; and this disposition of waste matters, upon which, to a large extent, the purity of their water supply must depend, would seem to call for instructions from this board.

The importance of proper ventilation of sleeping and living rooms, and the matter of over-crowding might also be considered in the circular, to which reference was made.

I have already supplied the superintendent of each county infirmary with circulars on disinfection, and the prevention off contagious diseases.

The National Conference of State Boards of Health will meet in Lansing, Michigan, June 6th and 7th. As secretary, I have made up the program, not yet published, which I present in order that the Ohio board may formulate a question it desires to have discussed by representatives of other state boards.

JUNE MEETING.

A regular meeting of the state board of health was held in Columbus, convening at 8 p. m., June 1st, 1892.

Present, Drs. Sharp, Hoover, Conklin and Wise. Dr. Sharp presided.

The secretary read the minutes of the last meeting, which were approved.

The secretary presented his quarterly report, which was received and ordered filed for publication.

Dr. Sharp stated that, according to newspaper reports, the health department of Cincinnati had decided to enforce the rules of the state board of health requiring houses containing cases of diphtheria, scarlet fever and small-pox to be placarded.

The outbreak of small-pox at Pomeroy, reported by the secretary, was discussed, and the secretary was instructed to go to Pomeroy at once, and make an investigation of the number of cases existing, and the precautions being taken to prevent spread of the disease.

Dr. Hoover stated that samples of Ohio river water sent to Columbus for bacteriological examination, in connection with the board's investigation of the pollution of the Ohio river, had always arrived twenty-four to thirty-six hours after collection; and that Dr. Bleile had recommended that examinations made on the spot would be of great value in determining the changes which had taken place in the interim between collection and examination of samples, when these were shipped to Columbus. On motion of Dr. Wise the secretary was instructed to request Dr. Bleile to make a biological examination of public water supplies of all Ohio river towns, the examinations to be made at the points where samples were collected.

The president announced that the election of officers for the ensuing year would be in order. Dr. Hoover nominated Prof. E. T. Nelson, and moved that the secretary be instructed to cast a ballot for the board. The secretary reported that he had cast a ballot for Prof. Nelson, and he was declared elected president, to take his seat at the next regular meeting of the board.

Adjourned until 10 a. m. of the following day to meet with the Funeral Directors' Association in the House of Representatives.

Secretary's Report.

PRESENTED AT THE JUNE MEETING.

MR. PRESIDENT:—Your secretary begs to submit the following report of official work since the last meeting, five weeks ago.

The rules adopted by the board at its last meeting with reference to placarding houses containing cases of scarlet fever, diphtheria or smallpox, and requiring the immediate burial of the bodies of persons dying of infectious diseases, were printed and, together with a circular letter calling attention to the necessity for their enforcement, were sent to each local board of health in the state.

A communication was received from Dr. Seys, health officer of Springfield, stating that he had caused an undertaker of that city to be arrested for taking the body of a person who had died of scarlet fever into a church and holding a public funeral, contrary to the rules of the state board of health. Counsel for the defense moved to quash the charge on the ground that the state board of health had no constitutional authority to make and enforce such a rule. Dr. Seys informed me that he was greatly in need of assistance in prosecuting the case, and requested the state board to aid him. I consulted the Attorney-General in regard to the matter and he was of opinion that it would probably be well to attempt to sustain the rules of the board, although the results of a trial were doubtful. He very kindly offered to go to Springfield with me, and by the advice of the president, to whom I fully explained the case, I also engaged ex-senator Pringle, of Springfield, to assist in the prosecution. The motion was to have been argued May 14th, and at my request Mr. Pringle came to Columbus on the 12th, for consultation. He informed me that the mayor, with Dr. Seys' consent, had offered to remit the fine if the defendant would plead guilty, and this he was expected to do, but later had decided to contest the case. Mr. Pringle was not very sanguine of winning the case, but as it is probable that a better opportunity to determine the authority of this board to make and enforce rules and regulations will not be presented, I trust the matter will not be allowed to drop. Mr. Pringle notified me on the 13th that on account of the indisposition of Mr. Rawlins, counsel for the defense, the date for arguing the motion had been postponed.

May 19th, a communication was received from Dr. Carr of Coshocton, stating that there had been within a period of less than three weeks four deaths from cerebro-spinal meningitis, which had caused great public alarm, and that, at the mayor's request, he referred the matter to the State Board of Health, and requested its assistance. The evening of the same day I received a telegram from the mayor requesting me to come to Coshocton at once. I went the following day, and, on arrival, a meeting of the physicians and board of health was called; some eight or nine physicians were present, and all of the board of health. I learned that there had been six cases of the disease in all, four adults and two children. One of the children died while I was there, making five deaths. The first case occurred about the third of May, resulting in death after three days' illness. The duration of the disease varied from two to four days. The symptoms consisted of severe pains in the head, back, and in some cases the lower extremities, followed soon after with delirium, with lucid intervals, ending in coma. The fever was not high—102 to 103 degrees. Eruption was present in three cases, which presented the appearance of spots of ecchymoses. A peculiar symptom was present in two of the four cases attended by Dr. Barcroff, which was the abundant discharge from the nostrils of a fluid looking like pus. This continued to discharge for some hours after death. Dr. Carr, Sr. informed me that he had known of but two cases of cerebro-spinal meningitis in Coshocton county prior to these casas, in the last forty years. It was reported at the meeting, however, that there had been one or two deaths in the county before these cases in Coshocton occurred, which it was now thought were due to this disease. I said to the meeting that, with our present state of knowledge, cerebro-spinal meningitis could not be placed among the *preventable* diseases. That it is practically agreed that the disease was not contagious, and that it apparantly did not depend upon bad sanitary surroundings nor bad food. That meterological conditions seemed to influence its prevalence, but did not produce it. The local physicians supported these statements. Members of the board of health said that they had had great difficulty in enforcing sanitary regulations, and that they would regret to have it officially announced that bad sanitation had nothing to do with the disease, as they wished to profit by the present scare. The mayor stated that there was great public alarm, and that business had been largely suspended because the farmers feared to come to town, thinking the disease was contagious. He especially desired the assistance of the state board in quieting this alarm. I was requested to make a report upon the sanitary condition of Coshocton with that end in view, and also to urge the necessity for placing the city in good sanitary condition. After driving over the principal portion of the city, I submitted the following report:

COLUMBUS, O., *May 21, 1892.*

To the Board of Health, Coshocton, O.

GENTLEMEN:—I have the honor to submit the following report of my inspection of the sanitary condition of your city with special reference to the prevalence of cerebro-spinal meningitis:

It should first be stated that the cause or causes of this very fatal disease are exceedingly obscure. It has been made the subject of careful investigation by observers in this and other countries, but our information in regard to its etiology is mainly negative. All authorities are agreed that the disease is not contagious, and is not communicated by the sick to the well. It is therefore unnecessary to resort to quarantine to prevent the spread of the disease. Atmospheric conditions, apparently, are not accountable for it. Season is undoubtedly one of the factors in its production, for the great majority of cases in all countries occur during the winter or cold spring months. It has been noted, also, that the disease very frequently occurs in persons after over exertion and exposure to cold, and it would be well, as a prophylactic measure, to warn your people against undergoing, at this time, great fatigue and subsequent exposure to cold. Also not to doff winter under-garments until warm weather has been fully established. The effect of bad sanitary conditions in causing this disease, has not been clearly established, though there is some evidence to show that persons living under such surroundings are more liable to contract it, or at least will be more likely to have a fatal attack. It should therefore be the duty of your board to enforce vigorous measures to place your city in the best possible sanitary condition.

I find that with some few exceptions the surface of your city is tolerably free from filth. The streets are clean, the alleys fairly so, and but little exception could be taken to the yards about the dwelling houses. There is, however, an unknown quantity of dangerous filth stored beneath the surface which must endanger the health of your people.

Your city is built upon a soil composed of a shallow top layer of clay beneath which loose sand and gravel are found for great depths. All, or nearly all privy vaults and cesspools pierce this layer of clay, and unless they are made water tight, allow their contents to drain freely away.

The water in your wells is obtained from this bed of sand and gravel, and as many of these are within 30, 40 and 50 feet of uncemented privy vaults, their supply can scarcely escape pollution. An ordinance of your city requires all vaults and cesspools within 50 feet of any well to be cemented and made water tight, but this ordinance, I am informed, is very frequently evaded, and there are many old vaults within this limit that are not cemented. It is doubtful whether a well 50 feet from an uncemented privy vault in such a soil can be considered safe; and as a polluted soil gives rise to other dangers besides the pollution of wells, it would be a wise measure to require that *all* vaults and cess-pools shall be made water tight.

Your city is to be congratulated on its recent introduction of a public water supply which seems to be abundant and of great purity, and your citizens should be urged to make use of this wherever possible; at the present time not more than one-third, probably, of your population are using this supply. There are some wells in your city which are obviously grossly polluted, and your board should condemn such wells and require them to be closed so that they cannot be again used.

The question of sewerage is one that must soon be met by your city. The introduction of a public water supply always leads to a greatly increased use of water. Your hotels and many dwellings are being supplied with waterclosets, baths, etc., and this fouled water must be disposed of. To run it into the soil on which you live will give rise to great danger, and the only proper remedy is a system of sewerage. Your city is so situated that most parts of it can be drained of storm water by means of open gutters, so that it would only be necessary to provide sewers for sewage proper; and this would only require small pipe sewers which can be laid at a comparatively small cost.

The location of Coshocton has many natural advantages, and with proper attention to sanitary measures the health of your city should be equal to that of any other place in our state.

I may state, in conclusion, that from the history of cerebro-spinal meningitis in our state for many years past, we may reasonably hope that the disease will not become epidemic.

I have requested Dr. Barcroff to furnish a full report of the cases, and trust he will do so.

The Ohio State Journal May 19th, contained a special from Pomeroy in which it was reported that several cases of disease had recently occurred there which the majority of their physicians pronounced chicken-pox, but which one or two physicians said was small-pox, and that the public was considerably alarmed over the report. I wrote to the board of health of Pomeroy on the same date, requesting to know the facts regarding the report and asking what action had been taken by the board in regard to the matter. I advised that, if there was any question about the diagnosis, the public should be given the benefit of the doubt, and offered the assistance of the State Board if desired. The health officer responded as follows:

POMEROY, OHIO, *May 25, 1892.*

C. O. PROBST, M. D.

DEAR DOCTOR:—Yours received. We have had in this city during the past month, six cases which Drs. Reed, Hoff, Philson, Ackley, Cutler, Whaley, Thomas and others diagnosed chicken-pox. Three of these cases are well—the others convalescent. There has been no new cases for past two weeks.

The cases on hand have been isolated, and we think we are through with the trouble. The board of health of this city has managed two epidemics of small-pox—and we think we are able to corral this thing.

I will keep you posted as to how matters progress.

Truly Yours,
(Signed) J. H. HYSELL, H. O.

It is publicly reported that other cases have occurred since, and I am informed that the citizens of Pomeroy and of the adjacent village of Middleport are considerably alarmed.

I have had several inquiries for vaccine virus lately, and ordered ten points from the National Vaccine Establishment at Washington, D. C. I telegraphed yesterday for twenty more points. This virus is highly recommended to me, and I am endeavoring to arrange to receive a supply every two weeks, with privilege of returning unused points.

Dr. McNeil, the new dairy and food commissioner, called upon me and said that he would be pleased to co-operate with the board in stopping the sale of adulterated food. In the adulteration of milk, if health authorities will furnish samples, which there is good cause to suspect, the commissioner will have them chemically examined, and will prosecute where adulteration is found. I would suggest that it would be well to send a circular to local boards of health apprising them of this offer and possibly giving some simple tests which would indicate the probability of skimming or watering.

I would renew the recommendation contained in former reports that the board should complete the examination of the sanitary condition of state institutions.

The following books have been purchased for the library: Text Book of Bacteriology—Fraenkel; Story of Bacteria, Dust and Its Dangers, and Drinking Water and Ice Supplies by Prudden; Text Book of Hygiene by Rohe; Ptomaines and Leucomaines by Vaughan; Diphtheria by Thorne.

MINUTES OE A SPECIAL MEETING OF THE STATE BOARD OF HEALTH.

A special meeting of the State Board of Health was held in Columbus June 5th, 1892.

Present, Drs. Hoover Wise, Miller, and Conklin.

On motion, Dr. Hoover was elected president pro tempore.

Dr. Hoover announced that the meeting had been called for the purpose of considering measures to prevent the spread of small-pox which prevailed in southern Ohio.

The secretary reported that he had come from Pomeroy on the 4th, where he had found cases of small-pox; there was also one case in Middleport, and one in Gallipolis. A number of cases were reported in Mason City, West Virginia, and cases were reported at Hartford City, Clifton, Pt. Pleasant and Leon, all of West Virginia. Quarantine against Pomeroy had been established by many towns in Meigs and Gallia counties, and Gallipolis had stopped trains on the Hocking Valley Railroad from going further south than Cheshire, ten miles below Pomeroy. The Pomeroy authorities, after allowing the disease to prevail under the name of chicken-pox for forty days, had commenced active measures to bring it under control, but the number of people who had been exposed made it exceedingly probable that many more cases would occur.

The secretary recommended that the Board should assume control in the infected district, and adopt and enforce quarantine rules for the protection of the state. The following quarantine rules were presented, and after some discussion, were adopted by the Board:

QUARANTINE REGULATIONS ADOPTED BY THE OHIO STATE BOARD OF HEALTH FOR THE PREVENTION OF SMALL-POX.

To whom it may concern:—

The following quarantine regulations of the Ohio State Board of Health will be enforced from and after this date, and until further notice:

1. A medical inspector appointed by the state board of health shall be in attendance at railroad stations and steamboat wharves at Pomeroy, Middleport and Gallipolis prior to the departure of every train or steamboat from such places.

2. He shall permit only such person or persons to leave by train or steamer as furnish satisfactory evidence of being free from the contagion of small-pox, and of not having been exposed thereto; and shall issue a certificate to that effect, signed by himself, which shall be presented by the holder to the conductor or master of the train or steamer on which such person takes passage.

3. He shall not permit the shipment of rags or household goods; and shall allow only such baggage, express matter, freight or other material to be shipped as are satisfactoriliy guaranteed to be free from danger of conveying small-pox.

4. All trainmen, freight-handlers, and all officers and employes of steamboats or trains arriving or touching at Pomeroy, Middleport or Gallipolis shall present satisfactory evidence of recent successful vaccination, or be vaccinated.

5. It shall be the duty of the health authorities of Pomeroy, Middleport and Gallipolis to assist the medical inspectors in enforcing the above regulations.

Adopted June 5th, 1892.

Attest: C. O. PROBST, M. D., *Secretary.*

The secretary was instructed to have the quarantine regulations published in the daily papers, and to send copies to the managers of all railroad and steamboat companies entering the infected district.

It was voted to send the secretary to Gallipolis, Middleport and Pomeroy with instructions to appoint the necessary medical inspectors, and to superintend the enforcement of the quarantine regulations adopted by the Board. The secretary was given authority to suspend or modify the regulations as circumstances might require.

Dr. Wise was appointed a committee to assist in enforcing quarantine should assistance become necessary.

There being no further business the board adjourned.

MINUTES OF A SPECIAL MEETING OF THE STATE BOARD OF HEALTH.

A special meeting of the state board of health was held in Columbus September 3, 1892. The meeting was called to order at 8 p. m. by the president, Dr. Sharp.

There were present at the meeting Drs. Sharp, Conklin, Stanton, Hoover and Wise. Prof. Nelson, being absent from home, did not receive notice of the meeting in time to attend.

The president announced that the object of the meeting was to consider measures to prevent the introduction of cholera into Ohio, and to advise local health authorities of means for controlling its spread.

The secretary reported that a circular on the prevention of cholera had been printed which was being sent to all parts of the state for distribution; that a circular to railway managers relative to precautions to be observed by railways to prevent the introduction of cholera, and containing instructions for the personal care to be observed by railway employes had also been printed and copies supplied to railway managers for distribution. The secretary recommended that preliminary arrangements should be made in advance to inspect all trunk lines of railways entering the state from the north, east and south, and for the establishment of quarantine stations at proper places on such railways; that medical inspectors be appointed at each of these places to be in readiness to inspect trains and establish cholera camps. The proposition was fully discussed, and the following places were selected for the location of quarantine stations: Conneaut, Latimer, Youngstown, East Palestine, East Liverpool, Steubenville, Bellaire, Belpre, Ironton and Cincinnati.

On motion of Dr. Wise it was voted to appoint committees to visit each of these places with instructions to make all necessary arrangements for establishing quarantine, as recommended. The president appointed the following committees: For Conneaut, Dr. Miller; for Latimer, Youngstown, East Palestine and East Liverpool, Dr. Conklin; for Steubenville, Bellaire and Belpre, Dr. Hoover; for Ironton and Cincinnati, Dr. Stanton. For Cleveland, Sandusky and Toledo, to arrange for quarantine for lake vessels at all three places if found necessary, Dr. Wise. The secretary was made a member of each committee.

Dr. Stanton was instructed to arrange, if possible, to have the local authorities at Cincinnati enforce the requirements of the State Board of Health, acting in conjunction with the state authorities.

On motion of Dr. Hoover the secretary was instructed to formulate regulations for quarantine inspection. The secretary spoke of the advisability of issuing a circular to local boards of health on "How to deal with a case of cholera," and Dr. Hoover, Dr. Wise and the secretary were appointed a committee to prepare such a circular.

On motion of Dr. Stanton the secretary was instructed to request the emergency board to authorized the expenditure of $10,000 for quarantine purposes.

Adjourned.

MINUTES OF A SPECIAL MEETING OF THE STATE BOARD OF HEALTH.

A special meeting of the State Board of Health was held in Columbus, September 15th, 1892. The Board convened at the office of the secretary at 7:30 p. m.

The following members were present: Drs. Sharp, Miller, Stanton, Conklin, and Prof. Nelson.

Dr. Sharp presided.

The president announced that the object of the meeting was to consider measures and adopt quarantine regulations for the prevention of cholera.

Adjutant-general Pocock, who had been invited to meet the Board, was called on to state what assistance in establishing quarantine could be rendered by the Ohio National Guards. General Pocock stated that the O. N. G. were ready to furnish any assistance possible; that in conjunction with the secretary of the Board he had arranged to send tents, blankets, utensils, etc., to completely equip ten camps, each camp to accomodate one-hundred people. He said futher that he would guarantee a sufficient number of volunteers from the guards for guard duty. He suggested that as several of the regiments had excellent hospital corps, composed of from twelve to eighteen men, most of them pharmacist or students of medicine, it might be possible to secure nurses from among them.

On motion of Dr. Hoover a vote of thanks was extended to General Pocock for his prompt tender of assistance.

Reports on the selection of medical inspectors and the establishment of quarantine camps were made by the various committees appointed at the previous meeting. On motion the reports were ordered reduced to writing and the committees continued. Dr. Miller reported that he had arranged for a camp aud inspection at Conneaut, but had afterwards found it desirable to change the location to Ashtabula.

The secretary was instructed to prepare instructions to medical inspectors. He was also instructed to telegraph each medical inspector for a report by special delivery letter of arrangments made for establishing quarantine.

On motion of Dr. Hoover the action of the several committees appointed to arrange for quarantine was approved.

The secretary reported that he had wired each inspector to hold himself in readiness to commence inspection of trains at once.

A report was made by the secretary of the action taken at a meeting which he attended of representatives of the State Boards of Health of Pennsylvania, West Virginia and Ohio, and of the health department of Pittsburg, held in the city of Pittsburg, September 11. The secretary also submitted a report of a meeting of representatives of State Boards of Health which was held in Chicago, September 14th, at which he was present, and of the regulations adopted at the conference relative to the transportation of immigrants.

The secretary reported that he was ready to submit instructions to medical inspectors. The instructions to medical inspectors were then read and adopted by paragraphs.

On motion of Dr. Miller, the instructions to medical inspectors was adopted as a whole. They read as follows:

INSTRUCTIONS TO MEDICAL INSPECTORS OF THE OHIO STATE BOARD OF HEATH.

Commencing September 18, 1892, and until futher notice, you will strictly enforce the following orders:

1. Meet and inspect all inbound trains carrying passengers, passing through your station.

2. Where possible, meet trains a sufficient distance beyond the state line to have inspection completed when train reaches Quarantine station.

3. Personally inspect all passengers and crews of trains.

4. Question conductors concerning any sickness of passengers or crews.

5. Pay special attention to immigrants and their baggage.

6. Allow no immigrants to come into Ohio, unless provided with a certificate from the National authorities, or from the health authorities of the port of entry for such immigrant, setting forth that he or she is free from danger of conveying cholera, and that his or her baggage has been properly disinfected.

7. Order conductors before passing the State line to remove from the train any immigrant not provided with a certificate as above, and any baggage of immigrants not properly certified to as having been disinfected.

8. Should you find a person on board a train suffering from diarrhoea and vomiting, and suspected of having cholera, immediately remove all other persons except attendants to another car, and convey the infected car to the first side track in Ohio, nearest to the location selected for the Quarantine station.

9. Telegraph the Secretary of the State Board of Health at Columbus, immediately, of the fact, and a complete camping outfit will be sent you within twenty-four hours.

10. Make a list of the names and destination of all persons found on the car with a cholera patient, and immediately telegraph this information to the Secretary of the State Board of Health; also immediately telegraph the mayor or health authorities of the places to which such persons are destined.

11. Remove all baggage of a person found with cholera, or suspected cholera and thoroughly disinfect it as herein-after directed. Also disinfect all hand baggage of passengers found in a car with a cholera patient, if such baggage could in any way have been soiled with the sick person's discharges.

12. The car in which a person is found sick with cholera, after being vacated must be disinfected by the owners to the satisfaction of the medical inspector. (See disinfection.)

13. You will closely question all sick persons, and if the symptoms in any case are but slighly indicative of cholera, and if it seems improbable that such persons could have been exposed to cholera, you will permit such person to proceed. But in such case immediately telegraph the Secretary of the State Board of Health, of the name and destination of such person, and also telegraph to the health authorities or mayor of the place to which such person is going.

14. You will require conductors of trains to give you the destination of all immigrants holding tickets for points in Ohio, and will immediately notify the health authorities or mayor of the places to which they are destined of the number (not names) and expected time of arrival of such immigrants.

15. You will permit no train carrying passengers to pass the location of your Quarantine station until the passengers and crew have passed a satisfactory examination.

Arrangements and Care of Quarantine Station.

Should it become necessary to establish a quarantine camp a complete equipment will be delivered to your charge within twenty-four hours after notification. You are authorized to purchase supplies of food, medicine and disinfectants, and any article of camp equipment actually necessary for the safty or well being of those placed under your charge. You are also authorized to employ such number of nurses, cooks and guards as are actually necessary. Guards, when possible, will be sent to you from volunteers of the Ohio National Guards.

You will keep duplicate receipts of all expenditures, and the time of all employes. A scale of wages allowed for attendants has been forwarded under seperate cover.

In establishing a Quarantine camp, observe the following rules:

1. Arrange to completely isolate cholera patients.

2. Keep "suspects" apart from cholera patients and from others.

3. Allow nothing which has been near a cholera patient or "suspect" to be handled by others.

4. Receive all discharges from patients and "suspects" in vessels containing a quart or more of *Disinfectant Solution No. 1*, and allow them to remain one hour and then bury them remote from the station.

5. Keep in quarters for patients or "suspects," all necessary utensils, tableware, towels, bedding, etc. Place in *boiling* water immediately after use, all dishes, glasses, cutlery, etc., used by patients or "suspects." Immediately boil or immerse in *Disinfectant Solution No. 2*, all towels, handkerchiefs, etc., used by patients or "suspects," and all bedding, clothing, or other articles soiled by their discharges.

6. See that each person in camp washes his hands in *Solution No. 2*, before eating.

7. Guard quarters for patients or "suspects" night and day.

8. Guard constantly quarantine stations, permitting no one detained for observation to leave, and allowing no visitors.

9. Arrange for closet accommodations for those detained for observation, nurses and guards, by constructing trenches outside the camp, protected from the weather. Require each person to immediately disinfect stools by *Disinfectant Mixture No. 3*.

10. Provide one or more stretchers, completely covered with a sheet of oil cloth for conveying cholera patients from trains to the quarantine station. Soak the oil cloth in *Solution No. 2*, for an hour immediately after using the stretcher for this purpose.

11. Where necessary, provide a wagon or suitable conveyance to remove patients from trains to Quarantine station. Thoroughly wash exposed portions of such conveyance in *Solution No. 2*, immediately after such use.

12. Disinfect suspected baggage removed from trains as soon as possible.

13. Should a person die in camp of cholera, wrap the body in a sheet saturated with *Solution No. 1*, place it in a coffin and completely cover the body with sawdust, if obtainable, *saturated with Solution No. 1*, and bury it remote from the camp.

14. Record the name, nationality, residence, destination and date of death.

15. Keep a daily record of your doings, and be prepared to submit a complete report of all your official acts.

16. Administer in every possible way to the welfare and comfort of those detained in quarantine.

17. When absent from Quarantine station, place it in charge of a competent person.

DISINFECTION.

Make all preparation, without actual purchases, and be prepared to erect in a short time, if needed, a room for fumigation. The room should be about ten feet wide, ten feet high and twenty feet long. It can be made air tight by pasting on the inside several layers of paper. Secure tubs for containing bi-chloride solutions, and also tin wash boilers or large iron kettles, in which clothes can be boiled.

Have at hand, to be purchased if needed, sufficient quantities of bi-chloride of mercury, fresh chloride of lime and roll sulphur.

When needed, prepare the following disinfectant solutions:

DISINFECTANT SOLUTION NO. 1.

Corrosive sublimate	drachms 4.
Water	gallons 4.

This is for disinfecting discharges.

DISINFECTANT SOLUTION NO. 2.

Corrosive sublimate	drachms 1.
Water	gallons 4.

This is for disinfecting articles of clothing, utensils and the hands before eating. Wash the hands in clean, hot water after washing them in the disinfectant solution.

Label all solutions of corrosive sublimate POISON.

DISINFECTANT MIXTURE NO. 3.

Fresh chloride of lime	1 part.
Pulverized dry earth	4 parts.

To be used for covering fecal matter.

SULPHUR FUMIGATION.

For the room 10x10x20, use eight pounds of roll sulphur broken in small pieces.

Arrange clothing, etc., to be disinfected, on lines, exposing as much surface as possible.

Place the sulphur in iron pots supported on bricks in tubs of water, moisten with alcohol and ignite the sulphur, closing the room tightly, and keep it closed twenty-four hours.

Burn soiled clothing of little value, keeping an account of articles burned and their owners. Boil in water for one hour all wash goods, and other things that can be wetted. Use sulphur fumigation only for articles too valuable to burn and which cannot be wetted without injury.

To disinfect a car, wash all exposed surfaces with *Solution No. 2*, giving special attention to the water closet and its hopper. Close the car tightly and fumigate with sulphur, using four pounds for each 1,000 cubic feet of air space.

Cars are to be disinfected by owners, but to your satisfaction.

If special instructions are required touching any point, telegraph the Secretary at Columbus.

By order of the State Board of Health.

C. O. PROBST, M. D., *Secretary.*

On motion of Prof. Nelson the secretary was authorized to modify the instructions from time to time as might become necessary.

On motion of Dr. Hover it was voted to commence the inspection of trains as soon as the instructions to medical inspectors could be printed and furnished to inspectors.

Adjourned to 9 A. M. the following day.

The Board convened at 9.30 a. m., September 16, 1892. Present as before, with the addition of Dr. Wise.

The secretary presented letters from the health officer of Toledo in regard to quarantine of lake vessels at that point. The communications were ordered filed.

Dr. Wise submitted a report of arrangements made for quarantine of lake vessels at Cleveland, Sandusky and Toledo. The report was received and the committee continued, with instructions to reduce the report to writing and file it with the secretary.

On motion a committee, consisting of Dr. Stanton and the secretary, was appointed to prepare quarantine rules.

A committee consisting of Dr. Miller and Dr. Conklin was appointed to report upon compensation to be allowed medical inspectors, guards, nurses, cooks and other persons required for quarantine duty.

The Board recessed to confer with the Governor and Attorney-General, and re-convened 12:15, same date.

The committee on quarantine rules presented its report. On motion the report was received and the rules taken up seriatim. On motion of Dr. Conklin, duly seconded by Dr. Miller, the following quarantine rules unanimously adopted.

QUARANTINE RULES OF THE OHIO STATE BOARD OF HEALTH, ADOPTED SEPTEMBER 16, 1892.

By virtue of the authority vested in the State Board of Health the following regulations governing the transportation of immigrants or of passengers or baggage from New York City or other places infected with cholera will be strictly enforced:

Rule 1. It shall be unlawful for any railroad or other transportation company, or any common carrier to introduce into the State of Ohio any person suffering with Asiatic cholera or any baggage, freight or other article infected therewith.

2. On and after September 18th, and until further notice, no immigrant will be permitted to enter the state of Ohio unless he or she is provided with a certificate from the national authorities or from the health authorities of the port of entry for such immigrant, setting forth that he or she is free from danger of carrying cholera, and that his or her baggage has been properly disinfected.

3. Conductors or other authorities of all railway trains entering Ohio will be required to furnish medical inspectors the number and destination of all immigrants destined for this state.

4. It shall be the duty of conductors of trains and all other railway officers or employes to give medical inspectors such information as may be required concerning the condition of passengers, crew or baggage as regards danger of conveying the infection of cholera.

5. No railway company shall bring immigrants into the State of Ohio except in special trains or in special cars to which all other passengers shall be denied access.

6. Water closets on all trains coming from districts infected by cholera, and on all immigrant cars shall be locked during the passage of the train through the corporate limits of any city or village.

7. All cars used for transporting immigrants shall be thoroughly disinfected before being again used for carrying passengers.

8. It shall be the duty of all authorities to prevent unnecessary detention of trains, persons or baggage, consistent with the prevention of the introduction of cholera into this state.

9. These rules shall become operative on and after September 18, 1892, and remain in force until further notice.

"It shall be the duty of all local boards of health, health authorities and officials, officers of state institutions, police officers, sheriffs, constables and all other officers and employes of the state, or any county, city or town thereof, to enforce such quarantine and sanitary rules and regulations as may be adopted by the State Board of Health, and in the event of failure or refusal on the part of any member of said boards or other officials, or persons in this section mentioned to so act, he or they shall be subject to a fine of not less than fifty dollars, upon the first conviction, and upon a conviction of second offense of not less than one hundred dollars. (8035-295 R. S.)"

C. O. Probst, M. D., *Secretary.*

The committee on compensation for quarantine employes submitted a report, which was amended and adopted.

No further business presenting the board adjourned.

NOVEMBER MEETING.

A regular meeting of the State Board of Health was held in Columbus, November 2, 1892, convening at 8 p. m.

Present, Drs. Sharp, Hoover, Miller, Stanton and Prof. Nelson.

The minutes of the regular meeting held June 1st, and of the special meetings held June 5th, September 3rd, and 15th, were read and approved.

The secretary presented his report, covering the time from June 2d to November 2d, which was approved and ordered filed for publication.

Prof. Nelson tendered his resignation as president of the Board. He said it had always been the custom to tender the office to the retiring member, and that his election was due to a mistake, it having been the understanding of the Board that his term of office expired next. On motion of Dr. Hoover the resignation was accepted. Prof. Nelson nominated Dr. Conklin for President and moved that the Secretary be instructed to cast a ballot for Dr. Conklin.

The secretary reported that this had been done, and Dr. Conklin was declared elected.

Dr. Sharp thanked the members for the assistance given him while in office, and conducted the new president to the chair.

Dr. Sharp spoke of the approaching meeting of the American Public Health Association to be held in Mexico City, and said that he desired, as his last official act, to appoint the secretary to represent the Board at that meeting. On motion of Dr. Miller the appointment was confirmed.

A petition was presented from residents of Fostoria, relating to the discharge of a sewer within the corporation limits, and alleging that diphtheria was caused thereby.

The petition was referred to the president and secretary for investigation.

Communications were presented requesting permission to remove overland from Salem to Strongsville, the body of a child that had died of diphtheria. On motion of Dr. Hoover, it was voted to grant the request, subject to proper precautions to be specified by the secretary.

The secretary recommended, with a view of preparing for cholera, that an investigation be made by the Board, of public water supplies of Ohio towns; and suggested that a preliminary inquiry could be made by correspondence, to be followed by a personal visit to such places as required special attention. The recommendation was approved and referred to the secretary with instructions to make the necessary preliminary inquiries.

On motion of Dr. Hoover a committee was appointed to memorialize Congress for the creation of a National Health Department, and for such restrictions to immigration as would afford greater security to this country against the introduction of cholera.

On motion of Prof. Nelson, the secretary was instructed to prepare a catalogue of the library for publication in the next annual report of the Board.

The secretary, by vote, was authorized to spend $200 during the next year for books for the library. Prof. Nelson stated that the Superintendent of the Girls' Industrial Home at Delaware desired the Board to investigate the sewerage system of the Home. On motion the request was referred to the president and secretary.

On motion of Prof. Nelson, the president and secretary were authorized to secure, if possible, a joint meeting of the state boards of health of Pennsylvania, West Virginia and Ohio, to consider measures to prevent the introduction of cholera. On motion of Dr. Sharp, it was voted to call a meeting of the State and local boards of health in Columbus, January 26 and 27, 1893. The secretary was instructed to make all arrangements. The secretary presented the annual report for 1892, which was approved and ordered filed with the Governor. There being no further business, the Board adjourned.

REPORT ON THE SECRETARY PRESENTED AT THE NOVEMBER MEETING OF THE BOARD.

MR. PRESIDENT:—Your secretary begs to present the following report of work for the past quarter, or rather for the five months, June to October inclusive:

At the time of the June meeting the state was threatened with an epidemic of small-pox, and I was instructed to visit the infected district and take charge of quarantine. I have to submit the following report of operations in Pomeroy and neighboring towns where the disease prevailed:

REPORT OF THE SMALL-POX EPIDEMIC AT POMEROY AND VICINITY.

The Ohio State Journal, issued May 19th, 1892, contained a special from Pomeroy stating that several persons in that place were ill with what many of the physicians called chicken-pox, but that one physician maintained that the disease was small-pox.

A communication was addressed to the board of health of Pomeroy on that date (May 19) requesting information as to the correctness of this report, and stating that if there was a question concerning the character of the disease the public must be given the benefit of the doubt and the cases treated as genuine small-pox. An offer of assistance was tendered. In reply to this, Dr. Hysell, health officer of Pomeroy, answered that they had had a few cases of what the Pomeroy physicians, naming four or five of them, pronounced chicken-pox; that the local authorities were well able to control the situation, and that no assistance was needed.

On May 28th, Judge Brewster died of what was publically pronounced small-pox, though this was denied by the health authorities; and about the same time several letters were received from citizens of Pomeroy requesting this Board to make an investigation of the disease prevailing there.

These letters and reports were presented to the Board at its meeting held June 1st, and I was instructed to go to Pomeroy on the following day and make an investigation.

A telegram was sent to the mayor of Pomeroy requesting him to call a meeting of the board of health at 9 A. M., June 3d, and I left for Pomeroy on the evening of the 2d. On requesting a ticket for Pomeroy at the depot I was informed that no tickets were being sold to Pomeroy as trains were not allowed to run further south than Gallipolis. Mr. Fisher, general passenger agent of the C., H. V. & T. Ry., fortunately was on the train, and by his kindness an order was secured placing the train at my disposal after reaching Gallipolis. On arrival at this station I was met by several members of the board of health—having telegraphed them that I was coming—and it was arranged that the train should go through to Pomeroy that night, but that no passengers would be permitted to come to Gallipolis from Pomeroy or Middleport until further arrangements had been made. There was but one other passenger on the train at this time, a young man who very much desired to get into Pomeroy in order to take out a young lady whom he was engaged to marry. I promised him my services, and took him into Pomeroy with me. The members of the Gallipolis board informed me that a case of small-pox had been found in the Marine Hospital in that city, and I promised to return there as soon as possible.

I met the board of health at the time appointed, and found there was still doubt in the minds of some as to the character of the disease prevailing there. After an informal discussion a recess was taken, and in company with Dr. Hysell, health officer of Pomeroy, and Drs. Reed, Pake and Thomas, of Middleport, an examination was made of five or six of the cases. Two of these were cases of semi-confluent small-pox, and there could be no question as to the nature of the disease, which was small-pox, to which all of the physicians agreed.

The meeting of the board of health, which was held immediately after this examination, was attended by a number of physicians of Pomeroy and and neighboring towns, and by many citizens of Pomeroy. The discussion was mainly carried on by the physicians, and related principally to the diagnosis of small-pox. It was learned, however, that on May 28, following the death of Judge Brewster, the board of health had commenced active measures to prevent further spread of the disease; houses containing cases of small-pox were being guarded during the day, and persons known to have been exposed were being hunted up and vaccinated. Middleport, Ohio, which is immediately below Pomeroy, and is directly continuous with it, had quarantined against Pomeroy and other infected districts on June 2d. Gallipolis, 20 miles below Pomeroy, had taken the same action June 1st, and had included Middleport among the towns quarantined. Other towns in Ohio and West Virginia had also quarantined against Pomeroy at this time; guards had been placed on the roads connecting Pomeroy and Middleport, and subsequently nearly all roads leading from the infected district were guarded by village or township authorities.

Great excitement prevailed throughout the southern part of the state; and business at Pomeroy was at the lowest possible ebb, and was greatly interrupted throughout the whole of southern Ohio.

I advised that the epidemic could only be controlled by the prompt isolation of the sick, and of suspected cases, by strict quarantine of infected houses, and by the vaccination of every unprotected person in Pomeroy. To accomplish the latter it was suggested that the city should be divided into districts and a physician appointed for each district with orders to vaccinate all unprotected persons found therein, furnishing to the board of health a list of the protected, of those vaccinated and of those who refused to be vaccinated. This suggestion was adopted, and physicians were appointed to carry it out; but it may be remarked in passing that the work was not systematically done, and the continuance of the disease for six weeks or more thereafter was, in my judgment, mainly attributable to this neglect. Attention was called to the fact that houses containing cases of small-pox were not guarded during the night, and it was advised that this should be done, with the possible exception of houses which from their location and character of their inmates, might be trusted without guarding. This measure was also adopted by the health authorities; but there was some difficulty at first in securing efficient guards, and some exposures followed by small-pox occurred, which could have been prevented. The spring term of the public schools had ended a short time before this, and it was recommended that religious and other public meetings should also be temporarily stopped. A resolution embracing this measure was adopted by the board of health. Attention was called to the danger of allowing dogs from infected houses, of which there were quite a number, to run loose, and an order to kill or confine all dogs was adopted. A large package of the State Board's circular on the prevention of small-pox had previously been sent to Pomeroy, and it was suggested that one of these should be placed in each house in the city. Copies of this circular were sent from the office to all towns in the southern part of the state. Dr. Crary, health officer of Mason county, West Virginia, was present at the meeting, and reported that they had several cases of small-pox in Mason City, which is directly opposite Pomeroy across the Ohio river, all of which were tracable to a man named Roseberry, who had doubtless contracted the disease in Pomeroy. He was taken sick May 6, and died May 22, having been given a public burial, the nature of his disease not being known at the time. Some days afterward his body was exhumed and taken to his home in the country between Letart and Leon, W. Va., and reburied, several cases of small-pox resulting in that neighborhood from this exposure.

Many of the facts relating to the origin of small-pox in Pomeroy could not be learned at that time, but the results of more extended observations to establish this fact may be conveniently stated at this time. It should be remarked in the beginning that chicken-pox undoubtedly prevailed in Pomeroy during the months of last winter and spring, and cases continued to appear during the small-pox epidemic, though few in number. In one school during March, 1892, seventy out of seventy-six pupils were affected with chicken-pox.

The fact that this disease was prevailing when the first cases of small-pox appeared is doubtless one reason why the two were confounded; and the symptoms in the first case of small-pox being a typical in many respects rendered a mistake in diagnosis still more liable.

The first case of small-pox in Pomeroy (with one exception to be noted hereafter) was Ernest Geyer, aged nineteen months. He was taken sick April 18th with what the attending physician pronounced chicken-pox. The history in brief of this case, which led to the widespread epidemic following, was given by the attending physician as follows: For two days before being seen by the physician he had been feverish, the fever being ushered in by vomiting. On the 18th when seen by the physician his face presented a diffused redness with a few papules about the cheeks. On the 19th the papules had extended to the forehead, and some fever was present, and on the following day the eruption had spread over the entire body. The fever disappeared, but on the 7th day of the eruption his temperature, as recorded in the note-book of the attending physician, was 102-½ degrees. The eruption was first papular, then vesicular, but on some parts of the body is said to have been vesicular from the first. The vesicles contained a clear watery fluid which later became opaque and sero-purulent, but not distinctly pustular; many, but not the majoritv of these, were umbilicated. Two crops of eruption appeared on the same part of the body at intervals of four or five days, the last crop appearing when the old scabs were falling off. The patient had never been vaccinated, and was a stout rugged boy.

The child was seen by four or five other physicians, and all agreed that the disease was chicken-pox. The case was visited daily by different physicians for a week after the appearance of the eruption; and this solicitude about the case would seem to indicate that there was at least some doubt about its being a simple case of chicken-pox. On the 24th of April a physician who saw the case for the first time pronounced the disease small-pox; and this so alarmed the family that a consulation of physicians was called on the following day. There were five physicians present, but all but one of these had previously seen the case and pronounced the disease chicken-pox. This diagnosis was confirmed without a dissenting vote; and a child in the family who had been taken from school pending the results of the consulation, was, by the advice of the physicians, permitted to return to school on May 5th where he continued until May 25th.

The misleading symptoms in this case and the prevalance of chicken-pox at the time rendered a mistake in diagnosis very liable to occur; but other cases soon occurred about which there should have been no question. As previously stated the presence of small-pox was not acknowledged until May 28th, at which time the disease had spread to ten houses and no fewer than eight adults had come down with it, the small-pox eruption having made its appearance in all. These cases were all easily tracable to the Geyer family, and as chicken-pox almost never attacks adults no excuse can be offered for the health authorities not recognizing that the disease rapidly spreading over their city was small-pox.

For more than a month small-pox prevailed without check in Pomeroy; crossed the river and produced one death and many cases in Mason City; persons in attendance upon the sick were upon the streets, in stores and private houses, going to school and attending church, and patients were being visited daily by relatives and frends. It is remarkable that of the hundreds that were exposed so few contracted the disease.

Where did Ernest Geyer contract small-pox? As he had not been from Pomeroy for months before he was taken sick, the disease must have been brought to him. There were no visitors at Ernest's home during the week when he must have contracted the disease, who could have conveyed the contagion. No letters were received from suspicious quarters, and no clothing, book or other article was received that with any probability could have conveyed small-pox. The father of Ernest was in New York City from March 16 to the 20, returning home on the evening of the 21st. There is no history of his exposure to small-pox while in New York or on his journey, though the records of the New York City health department show that the disease was present in the city while he was there. It is at least possible that he was exposed to the disease on the train. Ten days after his return Mr. Geyer was taken sick with headache, backache and fever. If eruption was present it was not noticed. Backache must have been a prominent symptom as the physician who was called to see him prescribed a plaster for his back. He was confined to the house for two or three days, and was ailing for a week or more. Mr. Geyer was vaccinated when a child and again about ten years ago, aud was therefore protected to a greater or less degree against small-pox.

Ernest Geyer was taken sick just two weeks after his father's illness, and this, it is believed, was the origin of the Pomeroy epidemic. That small-pox may occur in such mild form as to escape observation may be considered doubtful by many, but this epidemic throughout was remarkable for the anomolous cases which occurred. In one family of nine persons one had semi-confluent small-pox, one discrete small-pox and the others varioloid. Of the latter a young lady with violent initial symtoms presented but two points of eruption, the one on the finger being typical of variola. Another member of the family, a young girl, had no fever, or if so it was unnoticed, but one perfectly formed pustule appeared on the lip. In quite a number of cases the eruption never progressed beyond the papular stage. Most interesting of all to me, and confirming the belief that the father of Ernest Geyer had unrecognized small-pox, was the large number of cases of what must be considered as *Feb. variolosae sine exanthematae*, or small-pox fever without eruption. No less than twelve cases occurred. These cases all occurred in vaccinated persons who were in daily contact with small-pox patients.

A brief account of some of the most interesting cases, from a diagnostic point of view, may be given here.

Twelve days after Ernest Geyer was taken sick, dating from the eruption, his mother was taken ill. A circumscribed spot as large as a silver half dollar-appeared on the right cheek. On the left cheek what seemed to be like a boil appeared, with a deep seated and hardened base. If fever was present it was not noticed, but she felt very much prostrated for three or four days. About the same time an aunt of Ernest who had visited him frequently during his illness, was taken with headache, backache and fever, lasting for several days. No eruption was noticed. Two or three days after, the grandparents of Ernest, who had often been with him while he was sick, were taken with similar symptoms, and were confined to bed for a day or two.

The family of Mr. Peoples contained three unvaccinated persons; one of these, a young boy, contracted small-pox, the eruption appearing May 8th. About three weeks after Mr. and Mrs. Peoples, the only ones in the family vaccinated, were taken with all of the symptoms of small-pox—headache, severe backache and fever—and were confined to bed a short time. A slight eruption appeared on Mr. Peoples, and both he and his wife had numerous small boils, similar to the one noticed on the cheek of the mother of Ernest Geyer. A crop of boils appeared in each of the three cases to occur in the Peoples family, following the eruption of small-pox, and were also noted in several other of the small-pox cases.

Lizzie Rheinhart contracted small-pox and her father, who was unvaccinated, took the disease; about the time the father was taken, a brother of Lizzie, vaccinated ten years before, was seized with all the initial symptoms of small-pox—headache, severe backache and fever,—and was sick for several days. No eruption was noticed.

Peter Rheinhart and wife visited Lizzie Reinhart after she was broken out with small-pox; both had been vaccinated many years before. Peter contracted discrete small-pox, and his wife, who nursed him, was taken eight days later with high fever, intense headache and backache and was sick for one week. No eruption appeared in this case.

Two old gentleman who had been vaccinated in childhood lived in the house with Julia Humphrey, who had discrete small-pox. Two weeks after Julia was taken sick, one of them was seized with the initial symptoms of small-pox and was sick several days; a week later the other old gentleman was taken sick in the same manner. In neither of these cases was eruption noticed.

Varioloid may occur with but one or two points of eruption, which may be on a part of the body out of sight ot the patient; and as no physician was called to many of these cases, it is quite probable that some of them were ordinary cases of varioloid, with hidden eruption. But in several of the cases minute examination of the whole body failed to reveal any eruption, and these cases, it is believed, may fairly be classed as cases of *Feb. variolosae sine exanthematae*, or small-pox fever without eruption. The crop of boils which appeared in some of these cases is worthy of special note.

Some interesting facts will subsequently be given, relating to the immunity conferred by vaccination, as witnessed in this epidemic.

I spent the day of June 3d looking over the ground at Pomeroy, and in the evening went to Middleport and met the board of health and a number of citizens who attended the meeting. Just before the meeting Dr. Pake, health officer of Middleport, requested me to see a suspicious case of which he had just heard. We found a married woman, Mrs. Watson, in the papular stage of varioloid, the eruption having made its appearance about 48 hours before. The only known exposure in this case was while on a visit to Pomeroy when she went into the store of Mr. Geyer—father of Ernest—having passed Mr. Geyer on entering the store. Thirteen days from that time she was taken with the initial symptoms of small-pox, which were followed by the eruption found. Her babe and two young women were found in the room with her; and in a part of the same house was another family consisting of the mother and three or four children. None of these people had been recently vaccinated, and the children were entirely unprotected. The husband was employed as a quarantine guard (he had been associated with a small-pox patient, his wife, for at least three days) and was on duty at the time.

The house and all its inmates were immediately quarantined, and a guard placed at the front and another at the the back door. All exposed persons in the house were vaccinated, and a list of all persons who had visited Mrs. Waston within three days prior to our visit was obtained, and these were all hunted up and vaccinated that night. No other cases occurred in Middleport outside of this house. Mr. Waston and his babe both had a mild attack of varioloid.

At the meeting of the board of health a report was made of what was being done in Pomeroy to guard the public. The board was advised, in addition to strict quarantine of the Watson family, to divide the town into districts and appoint physicians to vaccinate all unprotected persons.

The plan which was adopted and enforced here is a very good one. Each house was visited and inmates examined. The unprotected, if they permitted, were vaccinated; but as many families preferred their own physician for vaccination, a proper entry was made of such cases, and each physician was daily furnished with a list of the persons who had requested him to vaccinate them. As a result nearly every person in Middleport was promptly vaccinated or re-vaccinated.

There is a large steel-plant in Middleport which employes many hands who live in Mason City, W. Va. These men walk from their homes to Clifton, opposite to Middleport in W. Va. and cross the river in skiffs or by the ferry. It was advised that no person should be permitted to come into Middleport from Mason City without a proper health certificate from the health authorities of Mason City. It was reported at the meeting that two cases of small-pox had just been discovered in Clifton, and it was decided to patrol the river front day and night and prevent all persons from crossing the river to Middleport unless provided with a proper certificate. I agreed, if possible to arrange with the authorities of Gallipolis to honor certificaters issued by the health authorities of Middleport.

It was reported at this time that small-pox was present at Letart, Racine, Syracuse, Minersville, Pomeroy, Middleport and Gallipolis, Ohio, and in Letart, Hartford City, New Haven, Mason City, Clifton, Point Pleasant and Leon, West Virginia. It was impossible to verify these reports at the time, though I afterwards learned that many of these places had no cases of the disease.

On the following day, June 4th, I went to Gallipolis, an engine being kindly furnished me by the Hocking Valley Railway officials (all trains were stopped) and met the board of health. The board reported that a man named McCune, engineer on the Mountaineer, a passenger steamer plying between Gallipolis and Charleston, W. Va., had arrived sick at Gallipolis on Sunday evening, May 29th; that on the evening of the following day he had been admitted to the marine hospital, Dr. Bean, attending physician, having pronounced the disease to be syphilis. June 2nd, owing to rumors that the man had small-pox, the board decided to send some older men to the case, and requested Dr. James Johnston and Dr. Howells, health officer, to see McCune. It was agreed by all three physicians that the disease was small-pox, and a day or two later the patient was removed to the pest house. The board was not able to inform me where McCune had slept Sunday night or where he had spent Monday, Decoration Day, the town having been filled with strangers on that day. At the request of the board of health I saw McCune, in company with Dr. Bean, who was still the attending physician. McCune gave the following history of himself: He had been living on his boat for some time prior to his illness, but had stopped off at several points along her route, having slept in Charleston and Gallipolis. He had not been to Pomeroy for many months, but was at Middleport three weeks before taking sick, but did not get off the boat. He had no knowledge of having been exposed to small-pox. Twelve years ago he contracted syphilis, and a year or so later had had syphilitic eruption. He had not felt well for two or three days before coming to the hospital, and on Monday morning, May 30th, he first noticed an eruption about his face and scalp, which gradually spread over his arms, body and legs. He arrived at Gallipolis on Monday evening instead of Sunday, as reported, and went direct to Dr. Bean's house. Not finding him he went to his office, obtained admission to the hospital and returned to his boat for supper, after which he went to the hospital. While in the hospital he was visited by its matron, by his former landlady, who still kept a boarding-house, and by two or three of his friends. It will be seen that an unknown, and possibly large number of persons had been exposed.

At the time I saw him the eruption was disappearing; some scabs were still adherent to the back and lower extremities; there were one or two points about the face and several on the body that appeared characteristic of the remains of variolous eruption, though evidently most of the papules had aborted without vesiculation. His temperature was normal and he was feeling quite well and very anxious to get out of the pest house. As he knew that there had been a question raised in regard to the diagnosis, his statements were all taken *cum grano salis*. He claimed to have been vaccinated, but no scar could be found. I agreed in the diagnosis of varioloid.

A list of those who had visited McCune in the hospital was obtained; this was given to the board of health, and it was recommended that these people should be at once vaccinated. As it was possibly too late to prevent infection—four days after exposure for some—it was advised, as additional precaution, that these persons should be isolated for 14 days from date of last exposure. These measures were enforced. The board of health was informed that action relative to quarantine at Gallipolis would not be taken until after a meeting of the State Board of Health, which would be held on the following day.

At the meeting of the State Board of Health held Sunday, June 5th, I made a verbal report of the situation as I found it in the small-pox district. The following quarantine regulations were then adopted by the board:

QUARANTINE REGULATIONS ADOPTED BY THE STATE BOARD OF HEALTH TO PREVENT SMALL-POX.

To whom it may concern:

The following quarantine regulations of the Ohio State Board of Health will be enforced from and after this date, and until further notice:

1. A Medical Inspector appointed by the State Board of Health shall be in attendance at railway stations and steamboat wharves at Pomeroy, Middleport and Gallipolis prior to the departure of every train and steamboat from such places.

2. He shall permit only such person or persons to leave by train or steamer as furnish satisfactory evidence of being free from the contagion of small-pox and of not having been exposed thereto; and shall issue a certificate to that effect, signed by himself, which shall be presented by the holder to the conductor or master of the train or steamer on which such person takes passage.

3. He shall not permit the shipment of rags or household goods; and shall only allow such baggage, express matter, freight or other material to be shipped as are satisfactorily guaranteed to free from danger of conveying small-pox.

4. All trainmen, freight-handlers, and all officers of steamboats or trains arriving or touching at Pomeroy, Middleport or Gallipolis shall present satisfactory evidence of recent successful vaccination or be vaccinated.

5. It shall be the duty of the health authorities of Pomeroy, Middleport and Gallipolis to assist the medical inspectors in enforcing the above regulations.

Adopted June 5th, 1892.

Attest: C. O. PROBST, M. D., *Secretary.*

I was instructed to go at once to the infected districts and enforce the quarantine regulations, with authority to modify them according to changing conditions. Copies of the quarantine rules were given to the daily papers, and sent to the managers of the C. H. V. & T. and K. & M. Railways, and to the managers of the Pomeroy and Cincinnati and the Pittsburg and Cincinnati packet lines. The mayors of Pomeroy, Middleport and Gallipolis were notified not to permit passengers, baggage or freight to leave until further instructions to be delivered on my arrival. Dr. Johnston of Gallipolis, Dr. Hanlin of Middleport and Dr. F. C. Ard of Pomeroy were requested to meet me at the train. I took with me a supply of blank certificates for medical inspectors, prepared and printed on June 6th, and a number of vaccine points. On reaching Logan on the evening of June 6th it was learned that the crew of the train—the Hocking Valley—had not been vaccinated according to the board's regulations. Superintendent Waite was wired that the train would not be permitted to go into Gallipolis until the crew had been vaccinated, which I offered to do. The order for vaccination was given and carried out. At Gallipolis the train was met by a number of people, many of them members of the board of trade. A protest was made against quarantine at Gallipolis on the ground that it was not necessary, or if so the local board of health could control the situation. The object and nature of the board's regulations were explained—that they were to protect the business interests of Gallipolis as well as guard the state against small-pox; that the State Board expected to co-operate with the local board, and that their own citizens would be selected to enforce quarantine. The meeting was reminded that towns on the railroad north of them had the same rights of quarantine as Gallipolis, which had shut trains out of Middleport when there was not a case of small-pox in that village, and that already Logan and other towns contemplated such action, which would doubtless be taken except for the interference of the State Board. It was further stated that quarantine would last only eight days—that was fourteen days from the date of last exposure to their small-pox patient—provided no other cases developed. As the steamboat landing and railway depot are two mills or more apart it was necessary to appoint two medical inspectors, and Dr. James Johnston and Dr. J. T. Hanson were appointed. They were given written instructions to meet all trains and boats; to permit no person to leave Gallipolis by train or steamer who had small-pox or who had been exposed to the disease, nor any suspected baggage, express or freight. No passengers or baggage from any place in Ohio or West Virginia where small-pox prevailed were to be permitted to enter Gallipolis unless accompanied by a proper certificate from the health authorities. They were furnished with copies of the following blank certificates which were issued to all passengers, and given for all shipments of freight or express leaving Gallipolis:

FREIGHT CERTIFICATE.

(Stub) No........

Character of freight....

....

....

....

....

....

loaded at......................

destination....................

received by....................
(Name of steamer or railroad with train No.)

..........1892 ....

Medical Inspector.

OHIO STATE BOARD OF HEALTH. No.........
CERTIFICATE OF NON-CONTAGION.
(FREIGHT.)

To Health Authorities:

I hereby certify that the following freight, to wit: ....

....

....

....

with destination..

....

loaded at.....................and received by........................

....
(Give name of steamer or railroad and number of train.)

............, 1892, is free from contagion of small-pox, and may be safely carried.

....*Medical Inspector.*

PASSENGER CERTIFICATE.

(Stub) No........

Issued to.....................

....
(Name in full.)

residence ....

destination ....

....

....

....

....

..........., 1892. ....

....
Medical Inspector,
at.................Ohio.

OHIO STATE BOARD OF HEALTH. No.........
CERTIFICATE OF NON-CONTAGION.
(PASSENGER.)

...........................OHIO, ..., 1892.

To Conductors of Trains and Masters of Steamers:

I hereby certify that.................................
(Name in full.)

....

who resides at..

....

....

with destination..

is free from contagion of small-pox and has not been exposed thereto.

Pass h......this........................day.........................

☞Passengers will retain this certificate.

....*Medical Inspector.*

The same blanks were used at Middleport and Pomeroy; the stub enabled us to trace every passenger, piece of baggage, express matter or freight going from either of the places during quarantine. Dr. Hanlin was appointed Medical Inspector at Middleport, with the same instructions as given for Gallipolis. There are two railway depots at Middleport several miles apart and on different railroads, but as the local authorities were guarding the K. & M. depot Dr. Hanlin was assigned to guard the river and Hocking Valley depot. He was also instructed to look after vaccination of crews of trains and steamboats.

On reaching Pomeroy it was found to be impossible to learn who had been exposed to small-pox, so the quarantine regulations were changed and railway and steamboat authorities notified that night that for the present passengers and baggage from Pomeroy would be contraband. Dr. F. E. Ard was appointed medical inspector, with instructions to inspect all express and freight sent out, to vaccinate unprotected crews of trains and steamers, and to permit no passenger to leave Pomeroy until further instructions were received. Large shipments of iron, coal, railroad ties and like freight had been tied up in Pomeroy for a week by the action of the Gallipolis authorities, and Dr. Ard was instructed to get this out at once.

I left Pomeroy for Gallipolis at four o'clock next morning and found the inspectors along the line on duty. While there a message was received requesting me to examine a case reported to be small-pox at Cheshire, twelve miles above Gallipolis on the Hocking Valley railroad. At Cheshire, Dr. Powell, who was attending the suspected case, met the train and gave me a message from Dr. Baker, secretary of the West Virginia board of health, who requested me to come to Middleport at once. where he was waiting to see me. Dr. Powell kindly went to Middleport with me, and on the train gave me a history of his case—a Mrs. Carl. She had been to Geyer's store in Pomeroy just 14 days before she was taken sick; and as the symptoms were somewhat suspicious, although the patient was not confined to her bed, it was advised that the township trustees should be notified and the case treated as varioloid until cleared up by further developments,

At Middleport I met Dr. Baker and Dr. Hoyt, of the West Virginia State Board of Health, and a statement was made to them of the number and location of all cases of small-pox in Ohio, and of the measures in force to prevent spread of the disease. They were given copies of the quarantine regulations of the Board and of the blank certificates being used by medical inspectors. I was very much in need of exact information regarding the situation along the K. & M. railroad in West Virginia, small-pox having been reported at several of their stations, as this road crosses the river at Point Pleasant and runs through the state of Ohio to Toledo.

Dr. Baker communicated with Dr. Barbee, of Point Pleasant, West Virginia, and ex-member of the State Board of Health, and he assured us that there was no small.pox at Point Pleasant nor on the Kanawha river. This information was afterwards verified by a personal visit to Point Pleasant, and quarantine against that place, so far as the state was concerned, was removed. It was agreed that with the exception of Pomeroy and Mason City, passengers, baggage, express and freight from any place in either state where small-pox existed would be mutually accepted when accompanied by a certificate issued by a medical inspector appointed by either State Board of Health. Freight and express, but not passengers from Pomeroy or Mason City were to be received when properly certified by state medical inspectors.

Returning to Pomeroy all houses containing small-pox were visited with the health officer. Up to that time, June 7th, there had been thirty-three cases and three deaths from small-pox in Pomeroy, twenty houses having been invaded. The public, now thoroughly alarmed, were self-constituted detectives in unearthing all cases of sickness, and the health officer and myself were kept busy in hunting up "suspicious" cases. Fever followed by eruption was caused by vaccination in many cases, and caused no little trouble. A case the least suspicious was isolated at once and a guard placed over the house until further developments. It was found impracticable to isolate crews of steamboats as rousters and deck-hands were usually changed each trip, and the managers of packet lines were notified that this order had been rescinded, but that crews would not be permitted to come ashore at Minersville (small-pox had appeared there), Pomeroy, Middleport or Gallipolis except to load or unload freight. A guard was appointed at Pomeroy, the only place of much danger, to enforce this order. At this time but few boats stopped at Pomeroy, as other towns along the river would not permit them to land when it was known that they had done so; but gradually, as the measures being enforced to guard danger from this source became known, the river trade was restored.

Hearing of small-pox at Chester, a small village eight miles back of Pomeroy, a visit was made to that place on June 8th. I met the township trustses, and in company with Dr. Hensley, the attending phisician, examined the cases. It was learned that Mrs. Gilmore had come to Chester from Pomeroy ten days before, bringing her babe with her, which had been taken sick ten days before she left Pomeroy. The child had had fever followed by an eruption, but the exact nature of the disease could not be made out, though varioloid was suspected. Seven days after her arrival in Chester two young children in the family of her brother, with whom she was staying, were taken sick with fever, headache followed on the second day by an eruption, which consisted of sparsely scattered papules most plentiful about the head and face. There was no fever at this time. Both children and the mother and father were vaccinated fou days prior to the day the children were taken ill. The vaccination was apparently unsuccessful, and the mother and father were revaccinated. There was some doubt as to the character of the disease but it was considered prudent to treat the cases as "suspicious," and it was announced to the trustees that they were cases of varioloid, and it was urged that every precaution should be taken to prevent spread of the disease. At the request of the trustees quarantine regulations were drawn up, and they appointed guards to enforce them.

June 10th small-pox was reported at Jackson, Ohio. It was learned by telegraphing that there was one case; that the patient was promptly isolated and that all exposed persons had been vaccinated; also that the exposure had occurred in Pomeroy on May 21st. Dr. W. H. Monahan, who was the attending physician, furnished the following report of the case: "The patient, Mr. Crossland, came to Jackson on June 3d on evening train. On Sunday, the 5th, he called at my house; said he had been sick for a few days, chilling, headache, and terrible pains in his back, his temperature being 105 F. at the time. On Monday he sentf or me; said he had not slept for a few nights; but fever had declined, and he commenced breaking out that morning, or during the night. I told him and the folks at the house to remain indoors until I came again on Tuesday. On Wedensday morning, the 8th, the case was self-evident, and I diagnosed it positively as varioloid, and was corroborated the same morning by Dr. C. K. Crumit, both of us having treated small-pox before. The case was strictly quarantined as well as the rest of those at the house. Mr. White, brother-in-law of the patient, and his wife and child lived in the house with the patient. Mr. White was away and did not go home, and Mrs. White and child, and wife of the patient, were the only inmates of the house. Mr. Crossland, the patient, was vaccinated about twenty-six years ago, and also eleven years ago; his wife and Mrs. White were vaccinated—Mrs. White eleven years ago and at this time—Mrs. Crossland ten years ago and now. I vaccinated the child on the 8th, and it took nicely. No one else contracted the disease."

Small-pox was reported in several other towns during the epidemic. First at Dexter, then at Logan, Rendville, Springfield and at the Insane Asylum at Athens. By the free use of the wire, these reports were all promptly investigated, and official denial of their correctness made in the newspapers, so that alarm was quickly quieted.

On June 15th the regulations were changed so as to allow passengers to leave Pomeroy who had recently been vaccinated, or permitted it to be done by the medical inspector. A few days later this was modified so as to apply only to residents of Pomeroy.

The Hocking Valley railway officials furnished a railway car, which was fitted up for fumigation of suspected baggage, etc.

On June 14th the mayor and medical inspector of Gallipolis reporting that no small-pox, or suspected small-pox, existed in that city, quarantine at that point was raised.

At the urgent request of Mr. Carl, husband of the suspected case at Cheshire, I met Dr. Powell and examined the patient. She was entirely well at this time, and I was unable to decide whether she had had small-pox, though inclined to the belief that she had not. She was discharged, and to be on the safe side, her room, clothing, bedding, etc. were disinfected.

The K. & M. agent at Middleport received instructions on June 20th not to sell tickets to Cincinnati, as that city had quarantined against Pomeroy and Middleport. He was instructed by the general passenger agent to send his passengers to Athens, where they could purchase a ticket direct to Cincinnati. Thus easily are quarantine rules evaded. The health officer of Cincinnati was wired in regard to the order, and he promptly replied that the certificates of the inspectors of the State Board of Health would be accepted.

I remained in Pomeroy almost continuously from June 6 to June 23, the thermometer registering from 95 to 100 degrees in the shade most of the time. This fact is recorded not to witness my discomfort, but as an interesting fact connected with the epidemic, many people believing that small-pox only prevails in cold weather. Scattered cases continued to occur at intervals during July, but on August 5th the town was officially declared free from the disease.

The following brief notes have been introduced to show the protection vaccination affords against small-pox:

Family, D. Geyer, Jr.; self, wife, three children, one servant; two children unvaccinated had discrete small-pox; self, varioloid; wife, doubtful varioloid; others escaped.

D. Geyer, Sr.: self, wife and daughter; all vaccinated some years ago; all had fever—possibly variolous— no eruption.

George Rheinhart: self, wife and eight children; self and one child not vaccinated had discrete small-pox; others vaccinated some years ago escaped except one who had fever but no eruption.

Dr. Owen: self, wife and five children; all vaccinated years ago in Wales; the doctor had varioloid, the others escaped.

Peter Rheinhart: self, wife and ten children; self and wife vaccinated many years ago; Peter had discrete small-pox; wife fever, but no eruption; seven of the children vaccinated ten years ago; of these one had mild varioloid—only one point of eruption—and the others escaped; the other three children were vaccinated fourteen days after the father was taken sick—all successfully—but two of them had discrete small-pox, appearing five days after vaccination.

August Baumgardner: self, wife and four children; he was vaccinated when a boy—had varioloid; others vaccinated day he was taken sick—all escaped.

Henry Zeisler: self, wife, baby and father; Mrs. Z. vaccinated thirty years ago, had confluent small-pox; Mr. Z. vaccinated many years ago, had discrete small-pox; baby vaccinated four times unsuccessfully, had hemorrhagic small-pox and died; father, vaccinated when a boy, escaped; servant, vaccinated and unsuccessfully when Mrs. Z. was taken sick, escaped.

Bery family: self, wife and seven children; one child unvaccinated had varioloid; others, all vaccinated second day after child was taken sick, escaped.

Mr. Harrie: self, wife, babe, father and sister; Mrs. H., vaccinated three times at different periods, unsuccessfully, had severe varioloid; husband and father vaccinated some years ago, escaped; sister vaccinated ten years ago, and re-vaccinated successfully when Mrs. H. was taken sick, also escaped; refused to have babe vaccinated, and it had mild varioloid.

Oscar Myers: self, wife and two children; he was vaccinated years ago, and had varioloid; wife unvaccinated—had varioloid; children vaccinated late—two days before taking sick—had discrete small-pox.

Sam Fugate: self, wife and two children; one child, unvaccinated, had discrete small.pox; self, wife and child vaccinated the day the child was taken sick; all escaped, with the possible exception of Mr. F., who had fever without eruption.

Eph. Miller, colored; unvaccinated; had hemorrhagic small-pox and died.

W. H. Probst: self, wife and three children; one child unvaccinated had semi-confluent small-pox; others vaccinated and re-vacciaated third day after child was taken sick—all escaped.

Humphery and Geyer families: five adults and five children; adults all vaccinated years ago; one had mild varioloid, two fever, but no eruption, and two escaped; and one child, unvaccinated, had discrete small-pox; two vaccinated two days before taking sick, and after being with a small-pox case three weeks, had discrete small-pox.

Judge Brewster: self, wife, son, daughter and nurse; all but nurse vaccinated some years ago, and son recentlyl; father and daughter unsuccessfully; Judge B. died of hemorrhagic small-pox; daughter had discrete small-pox—recovered, but died in short time of other trouble; nurse, unvaccinated, died of confluent small-pox; mother and son escaped.

Mr. Peoples: self, wife, sister and two children; self and wife vaccinated some years ago; others unvaccinated; sister and two children—all the unvaccinated—had discrete small-pox; self and wife had fever without eruption.

Mrs. Phillips: self and four children; Mrs. P., vaccinated when a child, had varioloid; children, vaccinated nine years ago and revaccinated day mother was taken sick, escaped.

Mr. J. A. Franz: self, wife and nine children; he was vaccinated when a boy—had varioloid; others, all successfully vaccinated day he was taken sick, escaped.

Phillip Sommers: self, wife and two children; he was vaccinated when a boy, but not successfully; had varioloid; wife, vaccinated many years ago, escaped; children, vaccinated day father was taken sick, also escaped.

Mr. Smith: self, wife and three children; wife was vaccinated when a child—ahd varioloid; two children vaccinated day before mother was taken sick, and father and one child on day after, escaped.

Rev. Fisher: self, wife and five children, he was vaccinated when a boy—had varioloid; wife and children, vaccinated day he was taken sick, escaped.

Mr. Hughes: self, wife and seven children; wife vaccinated when a child—had discrete small-pox; six of the children, vaccinated eight days after mother taken sick, and one sixteen days after; one had confluent small-pox; all the others varioloid; Mr. H., vaccinated when a boy—not re-vaccinated—had varioloid.

Mr. Watson: (Middleport) self, wife, child and young woman; a mother and three or four children in another part of same house; Mrs. W. vaccinated when a child—had varioloid; all others in the house vaccinated three days after she was taken sick; husband vaccinated when a boy; baby had varioloid, husband a doubtful case, and all the others escaped.

An interesting question concerning small-pox and vaccination was raised in connection with the McCune case at Gallipolis. One of the physicians who saw the case—Dr. Bean of the Marine Hospital—vaccinated McCune about the time he was released from quarantine. He produced what was pronounced by several physicians to be a typical vaccine "sore," though this appearance of the arm was denied by other physicians who saw it. This led to quite a wordy newspaper war, and because McCune had apparently been successfully vaccinated the fact of his having had small-pox was disputed. Aside from the local interest in this question (and whether McCune had small-pox or not, so long as there was a suspicion of this the authorities were bound to act on this suspicion) the possibility of vaccinating a person who has just recovered from small-pox is a matter of much interest. Some of the Gallipolis physicians, and one or two others who were appealed to, did not hesitate to express the opinion that it was impossible to successfully vaccinate one who had just recovered from small-pox; but this opinion was based on theory and not on practice. On looking up the literature of the subject I was surprised to find no mention of such an experiment having been made. In Watson's Practice of Medicine, p. 1163, an account is given of the vaccination of 100 persons who had previously had small-pox; of these thirty-two were successfully vaccinated, and modified vaccinia produced in twenty-six. In Reynold's System of Medicine, the result of vaccinating 1000 soldiers who had had small-pox is given; of these 319 were typical vaccinations, and 248 "took" in a modified form. Unfortunately these authors do not state how long a time had intervened between recovery from small-pox and the date of vaccination.

A communication was sent to the secretary of each State Board of Health in the United States, requesting information on this subject—either from personal experience or to be found in any work on small-pox or vaccination; I also requested an opinion as to whether it was considered possible to successfully vaccinate a person who had recently recovered from small-pox. Replies were received from twenty-six secretaries, and from Dr. Walsh, manager of the National Vaccine Farm at Washington, D. C. No one of these persons knew of any experiment having been made to settle this question, or of any literature on the subject. Sixteen of the twenty-seven, on theoretical grounds, were of the opinion that successful vaccination under such circumstances was possible; seven doubted its possibility, and four were not willing to express an opinion.

The matter was deemed of sufficient importance, circumstances being favorable, to make an investigation, and it was determined to vaccinate as many persons in Pomeroy who had recently had small-pox as would submit to the operation. Some fresh bovine virus from the National Vaccine Farm at Washington, D. C. was secured, and Dr. W. Ard, who was then acting as medical inspector, was placed in charge of the work. During the epidemic Dr. F. C. Ard and myself vaccinated four children who had just recovered from small-pox, but with negative results.

Dr. W. Ard vaccinated five persons who had recently recovered from small-pox, and in one case, he informs me, the vaccination was successful.

This case, Mrs. Phillips, was not reported to me until some weeks after the vaccination, and I was only able to corroborate Dr. Ard's report by the statements of the patient. Unfortunately no other physicians were called to see the case, so that the only evidence that successful vaccination had been performed is the record of the appearance of the arm, as seen by Dr. Ard. It should be stated, however, that Dr. Ard had just passed through an "epidemic" of vaccination—having seen hundreds of cases—and was well qualified to judge of the results of vaccination, in so far as this can be determined by appearances.

Rev. Mr. Fischer, who had recently had small-pox, was seen by Dr. Ard and myself about twenty days after he was vaccinated by Dr. Ard. At this time his arm presented a scab three-fourths of an inch long, one-half inch wide, and about one-fourth of an inch in thickness. This case was not kept under observation, and his statements form the only history obtainable. He stated that about a week after vaccination, some fluid appeared at the point of vaccination, surrounded by a thin border of redness. The arm was but slightly painful, and there was no affection of the axillary lymphatics. He was vaccinated many years ago in Germany, and still bore well-marked scars. This case was shown to Dr. Hysell and Dr. Hough, of Pomeroy, and both pronounced the scab to be identical in appearance with that resulting from vaccination.

It cannot be said that either of these cases prove that it is possible to vaccinate a person who has recently recovered from small-pox; and as Dr. Ard reported that it was difficult to pursuade small-pox patients (those just recovered from the disease) to be vaccinated, I secured fresh virus and went to Pomeroy and visited each family where small-pox had occurred. We succeeded in vaccinating twenty-three persons who had recently recovered from small-pox; five such persons had previously been vaccinated, making twenty-eight in all. Of this number nineteen were primary vaccinations, and nine were re-vaccinations. With the exception of the two cases—Mrs. Phillips and Rev. Fischer—the results were negative.

Dr. A. L. Knight, of West Columbia, and Dr. Thomas, health officer of Mason City, W. Va., kindly undertook to vaccinate the persons in the latter village who recently had small-pox; they succeeded in getting but four persons to submit to the operation—their results were negative.

So far as known this is the only experiment of this kind recorded; and it is hoped that others, when opportunity presents, will endeavor to settle this question.

Many valuable lessons may be learned from this epidemic. and standing out prominently above all others is the fact that physicians of wide experience in small-pox may fail to recognize modified forms of the disease, and that public safety demands that health authorities shall not idly wait for questions of diagnosis to be settled by the physicians when it is evident that a dangerous disease is spreading throughout a community.

My thanks are due to the members of the board of health of Pomeroy for their many courtesies, and for the hearty co-operation given for the enforcement of quarantine regulations; and particularly to their health officer, Dr. H. J. Hysell, for constant support and sympathy. I am also indebted to Mr. C. C. Waite, president, and Mr. J. H. Conners, superintendent of the Columbus, Hocking Valley and Toledy Ry., for their prompt and cheerful compliance with quarantine regulations, and for the ready assistance granted on all occasions.

TABLE.

Showing Names, Dates, Origin and Vaccination of Small-pox Cases at Pomeroy, Ohio.

Number.	Name.	Date of eruption.	Source of exposure.	When vaccinated.	Total number in household.	Number of unvaccinated.	No. who contracted small-pox	No. of vaccinated who contracted small-pox.	Patient isolated from family?	Remarks.
1	David Geyer, Jr........	None notic'd. Sick about March 31.	Prob'ly N.Y. city, or on train	Many years ago...	6	2	4?	2?	No	Probably case of varioloid. Ill but a few days.
2	Ernest Geyer...........	April 18...............	Father, David Geyer, Jr........	Unvaccinated......	6	2	4?	2?	No	Varioloid; diagnosis chicken-pox so considered until after recovery.
3	Mrs. David Geyer, Jr	Sick April 30.......	Ernest Geyer........................	Old vaccination...	6	2	4?	2?	No	Doubtful case; sick a few days followed by boils on face,
4	Ella Geyer................	Sick May 1..........	Ernest Geyer, her nephew...	Old vaccination...	3	None	3?	3?	No	Headache, backache and fever; no eruption noticed. Doubtful case.
5	Helen Geyer.............	May 2...................	Ernest Geyer........................	Unvaccinated.....	6	2	4?	2?	No	Varioloid; called chicken pox; attended school until taken sick; sister of Ernest.
6	David Geyer, Sr........	Sick May 6..........	Ernest Geyer........................	Old vaccination...	3	None	3?	3?	No	Grand-father of Ernest; symptoms same as in case 4, his daughter.
7	Mrs. David Geyer, Sr.	Sick May 6..........	Ernest Geyer........................	Old vaccination...	3	None	3?	3?	No	Same train of symptoms as in husband's case; no eruption.
8	Lizzie Rheinhart......	May 6...................	Helen Geyer, at school.........	Unvaccinated.....	7	2	2	None	No	Discrete small-pox; called chicken-pox; many exposures to this case.
9	Erma Brewster.........	May 9...................	Unknown. Must have been to Ernest Geyer or father..	Never successf'ly	5	3	3	None	No	Discrete small-pox; died; disease was unrecognized for three weeks.
10	Everett Peoples.........	May 9...................	At school with Geyer child..	Unvaccinated.....	5	3	5?	2?	No	Discrete small-pox; not recognized; was moved during illness to another house.
11	Dr. Owens.................	May 11.................	Ernest Geyer, April 21.........	Old vaccination..	9	None	1	1	Yes	Varioloid; children in family continued to attend school.
12	Julia Humphrey........	May 15.................	Carried milk to Geyer family	Unvaccinated.....	10	3	6?	3?	No	Discrete small-pox; called chicken-pox. Two families in same house.
13	Judge Brewster.........	Sick abo't May 21	Daughter Erma.....................	Never successf'ly	5	3	3	None	No	
14	Geo. Rheinhart.........	May 21.................	Daughter Lizzie....................	Unvaccinated......	7	2	2	None	No	Confluent small-pox; not recognized; Horn-pox on face.
15	Peter Rheinhart........	May 25.................	Lizzie Rheinhart, niece, May 8..............................	Old vaccination...	14	4	5?	3?	No	Discrete small-pox.
16	Rev. Fisher...............	May 26.................	Lizzie Rheinhart, May 9......	Old vaccination...	7	None	1	1	Yes	Varioloid; family vaccinated day after father taken ill; all escaped.
17	Ethel Myers..............	May 26.................	Lived in house with Evt. Peoples..............................	Two days prior to illness.........	4	3	4	1	No	Discrete small-pox.
18	J. Beckle....................	May 29.................	Lizzie Rheinhart, May 15.....	Old vaccination...	5	....	1	1	Yes	Varioloid; family vaccinated day after father taken sick—escaped.

TABLE.

SHOWING NAMES, DATES, ORIGIN AND VACCINATION OF SMALL-POX CASES AT POMEROY, OHIO.

Number.	Name.	Date of eruption.	Source of exposure.	When vaccinated.	Total number in household.	Number of unvaccinated.	No. who contracted small-pox.	No. of vaccinated who contracted small pox.	Patient isolated from family?	Remarks.
19	Mr. Turnbull	Sick ab't May 27	Lived with Julia Humphrey	Old vaccination	10	3	6?	2?	No	Fever, headache, backache, doubtful case—no eruption.
20	Mr. Ingram	Sick ab't May 27	Lived with Julia Humphrey	Old vaccination	10	3	6?	2?	No	Same symptoms as in case No. 19.
21	Nellie Cahoon	May 28	Nursed Erma Brewster	Unvaccinated	5	3	3	None	No	Died June 8; confluent small-pox.
22	Mrs. Hughes and family	May 29	Dr. Owens, May 13	Old vaccination	9	7	9	2	No	Family lived at Minersville. Seven children vaccinated June 3. All had mild varioloid. Mr. Hughes, vaccinated years ago, also had varioloid.
23	Eph. Miller	May 29	Moved Peoples family when Everett had small-pox, May 17							Died June 3, hemorrhagic small-pox.
24	Mrs. P. Rheinnart	Sick May 30	Husband	Old vaccination	14	4	5?	3?	No	Severe headache, backache and fever—no eruption—sick one week.
25	Emmet Peoples	May 30	To brother	Unvaccinated	5	3	5?	2?	No	Discrete small-pox—eruption followed by crop of boils.
26	Mr. and Mrs. Peoples	Sick May 30	To son Everett	Old vaccination	5	3	5	2	No	Both had severe headache, backache and fever, followed by crop of boils, like in childrens' cases. Sick about a week.
27	Mrs. Oscar Myers	May 30	Lived in house with Everett Peoples	Unvaccinated	4	3	4	1	No	Discrete small-pox.
28	Mrs. H. Geyer	May 30	Liv'd house Julia Humphrey	Old vaccination	10	3	6?	3?	No	Varioloid.
29	Aug. Baumgartner	May 31	G. Rheinhart, about May 18.	Many years ago	6	1	1	1	No	Varioloid. Wife and children vaccinated day he was taken sick—escaped.
30	Mrs. H. Zeisler	May 31	G. Rheinhart, about May 18.	30 years before	5	1	3	2	No	Severe confluent small-pox—recovered.
31	Roy Fugat	June 1	Everett Peoples, May 15	Unvaccinated	4	1	1	None	No	Discrete small-pox. Family vaccinated May 29—escaped.
32	Katie Rheinhart		Father	10 years before	14	4	5?	3?	No	Varioloid. Only one point of eruption.
33	Oscar Myers	June 1	Liv'd in house Ev't Peoples	Many years ago	4	3	4	1	No	Varioloid.
34	Mrs. Phillips	June 1	Unknown	When a child	5	None	1	1	No	Varioloid. Four children vaccinated day mother taken sick—escaped.
35	Willie Myers	June 2	Everett Peoples	Unvaccinated	4	3	4	1	No	Discrete small-pox.
36	John Probst	June 3	Everett Peoples, May 19	Unvaccinated	6	1	1	1	Yes	Family vaccinated June 3—escaped.
39	Jennie Cowan	June 2	Liv'd in house Ev't Peoples.	Unvaccinated	5	3	5?	2?	No	Confluent small-pox—recovered.
38	Child of H. Geyer	June 3	Julia Humphrey	Day prior to illn's	10	3	6	2?	No	Varioloid.
39	Mrs. Harrie	June 1	Lizzie Rheinhart, May 18	Never succes'f'ly	5	2	2	None	No	A young babe they refused to have vaccinated, had mild varioloid.
40	Child of H. Geyer	June 4	Julia Humphrey	2 days before illn.	10	3	5?	2?	No	Varioloid.
41	John Franz	June 4	Judge Brewster	Many years ago	11	None	1	1	Yes	Varioloid. Family vaccinated June 1—all escaped.

TABLE.

SHOWING NAMES, DATES, ORIGIN AND VACCINATION OF SMALL-POX CASES AT POMEROY, OHIO.

Number.	Name.	Date of eruption.	Source of exposure.	When vaccinated.	Total number in household.	Number of unvaccinated.	No. who contracted small-pox.	No. of vaccinated who contracted small pox.	Patient isolated from family?	Remarks.
42	J. Sommers	June 8	Courod in Mason, W. Va.	Never successf'ly	4	1	1	None	No	Varioloid. Family vaccinated June 9—escaped.
43	2 children of P. Rheinhart	June 9	Father	Five days prior to illness	11	4	5?	3?	No	Varioloid and vaccinia at same time.
44	H. Zeisler	June 9	Wife	Many years ago	5	1	3	2	No	Confluent small-pox.
45	Berrie child	June 10	Geo Rheinhart	Unvaccinated	9	1	1	None	No	Varioloid. Family vaccinated about June 11—escaped.
46	Mrs. Smith	June 11	Unknown	Many years ago	5	....	1	1	No	Varioloid.
47	Annie Zeisler	June 13	Mother	Unsuccessfully	5	1	3	2	No	Baby, one month old, vaccinated four times unsuccessfully; died.
48	Baby of Mrs. Harrie.	About June 16	Mother	Unvaccinated	5	2	2	None	No	Varioloid. Refused vaccination.
49	John Boestle	June 19	Berrie child	Unvaccinated	7	1	2	2	No	Patient was visiting Adam Rhone.
50	Benj. Biggs	June 20	Nellie Cahoon	45 years ago	3	....	1	1	No	Undertaker. Exposed at burial of Nellie Cahoon.
51	Frank Wehe	June 21	Probably Roy Fugate	Unvaccinated	8	1	1	1	No	Confluent small-pox.
52	Adam Rhone	July 9	John Boestle	Unvaccinated	7	1	2	2	No	
53	Mrs. Bartels	July 12	P. Rheinhart family	Many years ago	2	None	1	1	Yes	
54	Mrs. Heilman	July 12	Not known	Unvaccinated	4	None	1	None	Yes	
55	Mrs. Grauber	July 16	Frank Wehe	31 years ago	7	None	1	None	Yes	Patient pregnant; recovered. Family vaccinated July 14—escaped.
56	A. Grueser	July 17	Frank Wehe	10 years ago	3	None	1	None	No	Varioloid; wife and child vaccinated July 17—escaped.
57	Child of C. Geyer	July 19	Unknown	Unvaccinated	4	None	1	None	No	Varioloid. Family vaccinated day child was taken sick—escaped.

MEASURES TAKEN TO PREVENT CHOLERA.

Before the disappearence of small-pox from Pomeroy, the reports of cholera in Russia, threatening Europe, called attention to the possiblity of the disease reaching this country; and before I had left that city a case of cholera was reported, by the press, at Detroit, Michigan.

On the day following the official announcement of cholera in Hamburg, a meeting of the executive committee of the National Conference of State Boards of Health, of which I am the secretary, was called at Indianapolis, and a quarantine commission was appointed to visit and report upon the condition of all maratime quarantine stations of North America. Returning from Indianapolis, the following circular was issued, August 30th and an extra force of clerks was employed in order to promptly distribute the circular.

Demands for the circular came from all parts of the state, and over 25,000 copies were distributed. The circular was also published by a number of newspapers, and was thus multiplied many times.

THE PREVENTION OF CHOLERA.

[CIRCULAR ISSUED BY THE OHIO STATE BOARD OF HEALTH, AUGUST 30th, 1892.]

The presence of cholera in many of the European ports with which this country has direct communication is cause for anxiety to the people of our State, and the State Board of Health desires to urge upon all local boards of health, communities and individuals, the duty of taking such precautionary measures as will tend to prevent its introduction into our State, and its spread should cases of the disease unfortunately be brought within our borders.

It is the opinion of those best informed on the subject that cholera will in all probability reach our shores within the next few weeks—possibly days—and it remains to be seen whether our sea-board quarantine will be sucessful in stopping the disease at quarantine lines. While great precautions are being taken to accomplish this, the only safe plan for interior states is to make such preparations in advance as will make it impossible for the disease to spread should it pass quarantine defenses.

The most certain and efficient means to prevent the spread of cholera is to insure a condition of sanitary cleanliness—municipal and domestic.

Cholera is essentially a filth disease, depending upon unsanitary conditions and the use of a polluted water supply for its propagation. A clean city, with an efficient board of health prepared to deal promply with the cases of cholera brought into it, has little to fear from its ravages.

There are but few cities or towns in our State, however, that could be considered clean; and it should be the immediate duty of health authorities and house-holders to remove all cholera-breeding spots, prior to the possible introduction of the disease. It is too late to remove cholera-breeding filth after the seeds are sown, and stirring up filthy places in the presence of cholera will only increase the danger of its spreading. The germs of cholera will not florish in pure air, pure water and a clean soil; and if the disease gains access to our State those cities and towns which have sinned most against sanitation will be in the greatest danger.

Cholera is but one of the diseases depending upon filth and bad sanitary conditions for their spread, and the measures that should at once be enforced, as preparatory for the coming of cholera will, even though cholera should not come to us, be repaid a hundred fold by the saving of lives from other filth diseases, such as typhoid fever and diphtheria — diseases which are always with us.

DUTIES OF BOARDS OF HEALTH.

The responsibility for prompt action in the present emergency must rest principally upon local boards of health and health authorities; and the public should lend them every possible aid and necessary support in the discharge of their duties.

A thorough sanitary inspection, including a systematic house-to-house visitation should be made in each city and village at once. All stangant ponds, and low, wet grounds should be drained, and where possible, filled. Streets and alleys should be made clean, public sewers and drains flushed and disinfected, and all collections of garbage, manure, and other offensive matters promply removed. Slaughter houses and buildings used for offensive trades should be made as clean as possible.

A general notice should be given to householders to clean their dwellings and premises, and the board of health, by its house-to-house inspection, should see that this order is promptly carried out. Householders should be directed to have prives, waterclosets, sinks and drains cleaned and disinfected.* Special attention should be paid to cellars, which should be free from all decaying vegetables and rubbish, and be well aired. Damp cellars should be made dry by proper drainage, and white-wash should be liberally used. All accumulations of household garbage about premises should be removed beyond the boundaries of the town.

POLLUTED DRINKING WATER.

Boards of health should pay special attention to the purity of drinking water, for the germs of cholera are most frequently taken into the system by drinking water polluted by the discharges of a cholera patient. Great danger is to be apprehended from the use of a public water supply taken from a stream or lake which also receives sewage; for as the germs of cholera are found principally in the stools of the patient, and as these may be cast into sewers without destroying the cholera germ by disinfection, a sewage-polluted water supply may carry the disease to thousands.

It is unfortunately true that some of our cities are using water polluted with sewage, and such cities will be in special danger should cholera visit them.

Most people in Ohio depend upon wells for drinking water, and where these are located near to privy vaults which are not water-tight the use of such water is attended with great danger, and especially so during the presence of cholera. All wells should be inspected by boards of health; and where a well is found which there is good reason for suspecting, is being polluted by seepage from a privy vault' cess-pool or broken drain, or is receiving surface water which has washed over filthy places, such well should be condemned and closed.

The danger of polluted water can be entirely avoided by boiling it before using for drinking or culinary purposes ;and this should also be done with water used for washing vegetables or fruits eaten in a raw state.

Milk should also be boiled before using, when cholera is at hand.

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*A solution of copperas, or sulphate of iron — a pound and a half to a gallon of water — may be used for correcting bad drains, privies, cess-pools, etc., and should be frequently applied. If it should become known that the stools of a cholera patient have been thrown into a privy vault, copperas should not be used, but instead corrosive sublimate in solution in the proportion of "one pound for every five hundred pounds, estimated, of fecal matter contained in the vault. All exposed portions of the vault, and the woodwork above it should be thoroughly washed down with the disinfectant solution."

Health authorities should give attention to the condition of food supplies, and unripe and spoiled fruits, tainted meat or fish, and unwholesome foods of all kind should be condemned and their sale prohibited.

INSPECTION OF IMMIGRANTS.

Health officials should be on the alert for newly arrived immigrants. They should be kept under surveillance for several days subsequent to the unpacking of their baggage and effects, as the germs of cholera may retain their vitallity and be introduced in this manner; and if the least suspicion attaches to them they should be isolated for four or five days and their clothing, baggage, etc., thoroughly disinfected.

Should a case of cholera develop in Ohio the disease can be prevented from spreading by prompt isolation of the patient, the disinfection of all his discharges, including vomited matters, in a solution of corrosive sublimate—one drachm to the gallon of water, and the destruction by fire or the boiling in water for one hour of all bedding, clothing, towels, etc., used by the patient.

The first cases of cholera may be mistaken for cholera morbus or diarrhœa, and if the patient could have been recently exposed in any manner to cholera, the public must be given the benefit of the doubt; and the patient should be promptly isolated and treated as though the disease were undoubtedly cholera.

Telegraph the State Board of Health, at Columbus, of the first case or suspected case of cholera reported in your neighborhood, and every possible assistance will be given at once.

DUTIES OF SUPERINTENDENTS OF PUBLIC INSTITUTIONS.

The duty of preparing for cholera which devolves upon health authorities, also devolves upon those in charge of State and county institutions of every kind. They should at once make a thorough and careful inspection of the buildings and premises under their care, with a view of removing everything which offers a possible breeding place for the germs of cholera. The water supply, sewerage, plumbing, disposal of garbage and all accumulations of filth should receive proper attention, and immediate correction when found necessary. The condition and preparation of the food supplied to those under their charge should also receive attention, and every possible means taken to insure a high standard of health.

PRECAUTIONS TO BE TAKEN BY THE INDIVIDUAL.

The individual precautions against cholera, should it make its appearance in our State, should comprise the use of boiled water, tea or coffee, regular meals, avoiding unripe or tainted fruit, and indigestible food, and exercise or physical exertion carried to the point of exhaustion. With the first symptoms of diarrhœa go to bed and send for a physician.

While a person cannot be frightened into having cholera, fear, by interrupting digestion, and by lessening vital resistance, acts as a predisposing cause of the disease; and the preparation for cholera advised in this circular will, more than anything else, remove public alarm, and inspire confidence in health departments.

The germs of cholera are readily destroyed in an acid medium, and if taken into the stomach soon after eating, when its contents are highly acid, there is great probability that they would succumb, and fail to produce the disease.

Persons who are obliged to come in contact with cholera patients should, therefore, avoid exposure, if possible, while fasting.

Cholera is not believed to be contagious, like small-pox or scarlet fever, for instance, and it is necessary to *swallow* the germs of the disease to produce it.

If the recommendations laid down in this circular are promptly and thoroughly enforced there need be little cause for alarm in Ohio over the approach of cholera towards this country.

Please read this document with care, and then preserve it for future reference.

By order of State Board of Health.

C. O. PROBST, M. D., *Secretary.*

Copies of this circular can be obtained from the secretary at Columbus.

A circular was addressed to the managers of railways, containing suggestions as to measures to be employed to prevent the introduction of cholera by railroads, and also instructions to be observed by railroad employes to avoid contracting the disease. There was quite a demand for this circular, which was supplied to railroads in quantities for distribution.

The circular was as follows:

SUGGESTIONS TO RAILROAD COMPANIES RELATIVE TO THE PREVENTION OF CHOLERA.

There is danger that cholera will appear in this country in the near future, and your co-operation is earnestly requested in protecting the public against the introduction or spread of the disease.

We bespeak your assistance, also, in placing in the hands of your employes instructions for their personal protection.

Cholera is not a contagious disease, like small-pox or scarlet fever, and is most frequently spread by drinking water or eating food contaminated in some manner by the germs which are contained in the discharges, especially the bowel excreta, of a person suffering with cholera.

The manner in which the disease is spread clearly indicates the measures to be taken for its prevention, and we ask attention to the following precautions:

MEASURES FOR PUBLIC PROTECTION.

1. Special care should be taken to provide all trains with drinking water of of unquestionable purity.

2. The ice used to cool drinking water should be protected from contamination, and attention is called to the necessity for ensuring that the persons who handle ice for this purpose should thoroughly disinfect their hands by washing them in a solution of *bichloride of mercury—30 grains, water one gallon*, and afterwards with soap and water, just prior to filling water coolers.

3. Water closets and urinals on trains should be kept perfectly clean, and should be washed daily with solutions of bichloride of mercury—*one drachm to a gallon of water.*

4. Privy vaults, and water closets and urinals at stations should have the same daily care; and instructions should be given to have stations placed in the cleanest possible condition, removing weeds, and draining or filling low wet places, with the daily removal of manure, decayed fruits and vegetables and all filthy material.

5. Should a privy vault be used by a person suspected of having cholera it should be disinfected by corrosive sublimate in solution in the proportion of one pound for every five-hundred pounds, estimated, of fecal matter contained in the vault. All exposed portions of the vault, and the wood work above it should be thoroughly washed down with the disinfectant solution.

6. In the event of cholera reaching this country, trains and waiting rooms should be furnished with packages of bichloride of mercury, with instructions to

prepare, when required, a disinfectant solution by using *one ounce of bichloride of mercury to eight gallons of water.*

7. Should a person be seized with purging and vomiting or other symptoms of cholera in a waiting room at a railway station, his discharges and all floors, woodwork, etc., contaminated thereby, should be disinfected by the liberal use of the bichloride solution, and the local health authorities should be notified at once, and requested to take charge of the patient.

8. If a person is taken sick with the symptoms of cholera aboard train, the same care should be taken to disinfect his discharges and all articles, floors, seats, etc., soiled thereby; and all passengers except the patient and necessary attendants, should be removed at once to another car.

The health authorities at the next station should be notified by telegram to be ready to take charge of the patient on arrival of the train.

9. The car containing the patient, as soon as he is removed, should be thoroughly disinfected by washing all exposed wood work, floors and ceilings, with the *bichloride of mercury solution, 30 grains to the gallon of water*, and then fumigated by burning in each car not less than ten pounds of roll sulphur broken into small pieces in pans placed in vessels containing water.

10. All baggage belonging to persons suspected of having cholera, and all baggage and other articles exposed to such baggage should be given in charge of the local health authorities for disinfection.

11. An infected car containing a cholera patient, should not be brought into the station, where this is located in the thickly settled part of a city or village, but should be side-tracked, if possible, and placed in the care of a railroad official or employe until taken in charge by the health authorities.

12. The bowel discharges of a cholera patient, who, in the first stages of the disease, may suffer only with slight diarrhoea, may be widely scattered along the railway track, and the disease has been introduced into communities in our state in this manner. In the presence of cholera, therefore, water closets on trains should be locked before the outer boundary of any city or village is reached.

Water closets on Pullman cars flushed by water, can readily be fitted for the disinfection of excreta by filling the flushing tanks with a disinfectant solution. As mercury solutions attack metal, *fresh cholride of lime, eight ounces to one gallon of water*, should be used for this purpose.

The State Board of Health has arranged to inspect all passenger trains from infected districts, coming into Ohio, should cholera appear in this country, and your co-operation in this work is earnestly requested.

It will be the policy of this board to interfere with traffic as little as is consistant with public safety. And it is suggested, should inspection of passengers become necessary, it will be mutually advantageous to limit emigrant travel to special trains, or at least to special cars. Cars which have carried emigrants should be disinfected and fumigated after each trip. Quarantine rules, regulating inspection of trains, will be sent you when quarantine is declared.

INSTRUCTIONS FOR EMPLOYES TO BE OBSERVED DURING THE PREVALENCE OF CHOLERA.

1. Indulge in no excesses of eating or drinking.
2. Drink only water that has been boiled, or tea or coffee.
3. Use alcoholic drinks sparingly, or, what is better, not at all.
4. Avoid unripe or unsound fruits, and uncooked food, especially vegetables.
5. Never eat without first carefully washing the hands.
6. Pay great attention to personal cleanliness.

7. If seized with diarrhoea consult a physician at once. This is highly important, as by promptly arresting the diarrhoea in the initial stage of cholera the disease may often be arrested.

8. Should a railroad employe be taken sick with what is suspected to be cholera, he should be promptly isolated from all others, his discharges, including vomited matters, should be disinfected in the manner allready described, and the proper health authorities notified at once.

Label all solutions of bichloride of mercury, Poison.

As many additional copies of this circular will be supplied as you may require by applying to

C. O. PROBST, M. D., *Secretary, Columbus, Ohio.*

By order of State Board of Health.

The arrival at New York quarantine, August 30th, of the steamship Moravia, with a number of cases of cholera aboard, created great alarm in this country, and it appeared that prompt measures were required to guard the state against an invasion of the disease. On September 2nd a conference was held with Governor McKinley, who promised to give the Board every possible assistance in preventing the introduction of cholera into the state. On the same day Dr. Sharp was wired suggesting that a meeting of the Board should be called, and by his direction a special meeting was called for the evening of the next day—September 3rd. A letter was sent to the authorities of each lake town in Ohio requesting information concerning the liability of immigrants being received via Canada, and the facilities for detaining and caring for such immigrants, should this become necessary.

As directed by the Board, application was made to the Emergency Board to authorize the creation of a deficiency not exceeding ten thousand dollars, for quarantine purposes.

The request was promptly granted.

The following circular was prepared, and a copy sent to each township clerk in the state:

OHIO STATE BOARD OF HEALTH, OFFICE OF THE SECRETARY,
COLUMBUS, OHIO, *September 7, 1892.*

To the Township Trustees:

There is danger that an epidemic of Cholera may prevail in this country in the near future; and as the Township Trustees have been entrused with the duty of protecting the health of the unincorporated villages and country districts, you are urged by the State Board of Health to carefully consider the measure recommended for the Prevention of Cholera outlined in the enclosed circular.

While Cholera prevails to the greatest extent in large cities, the rural districts, when the disease becomes epidemic, are by no means exempt. On the outbreak of Cholera in any city there is at once a large outpouring of the inhabitants seeking an escape from the disease; and by this means Cholera may be carried into your midst.

Your board should at once look into the sanitary condition of your township, and use every effort to abate all filth nuisances. Special attention should be paid to wells, for Cholera is oftenest spread by means of contaminated water. The "town pump" in small villages is often a source of danger in not being protected from surface drainage. This should receive attention. Recommend to all householders to place their dwellings and premises in the cleanest possible condition, not forgetting that filthy stables, cow yards and pig-pens should receive attention.

If Cholera appears in this country, co-operate promptly with the physicians in preventing its introduction and spread in your township. Ask them to report at once the first suspicious case of the disease, and be prepared to properly guard the patient's house to prevent spread. Remember that Cholera is not contagious like small-pox, and that the prompt isolation of the patient and disinfection of all his discharges, bedding, clothing, etc., will prevent its spreading. If a person should die in the township, wrap the body in a sheet soaked in

Corrosive Sublimate,	30 Grains
Water,	1 Gallon

And bury it at once, permitting the fewest possible number of persons to attend the funeral. Thoroughly wash the wagon or hearse in which the corpse is hauled with the same disinfectant solution. Immediately notify the State Board of Health—by telegram, if possible—of the first suspected case of Cholera to occur, when prompt assistance will be given you.

By observing these precautions, and by being prepared to deal promptly with the first case of Cholera brought into the township, there should be little or no spread of the disease in rural districts.

As many copies of the circular on THE PREVENTION OF CHOLERA will be furnished you for distribution as you may desire, by applying to.

C. O. PROBST, M. D.,
Secretary of the State Board of Health.
Columbus, Ohio.

On September first, what is known as the President's order was issued, imposing a quarantine of twenty days on all vessels bringing immigrants to this country. As this order did not apply to immigrants arriving by rail, and it was not clear that the order was intended to include vessels from Canada, there appeared to be danger that immigrant travel would be diverted to Canadian ports, and that Ohio was in special danger in this direction. This fear was increased by the report of the quarantine commission appointed at Indianapolis, on the condition of the quarantine station at Grosse Isle, Quebec, the commission, according to the Cincinnati Enquirer of September 4th, declaring that only the total exclusion of immigrants arriving at that port would afford protection against the introduction of cholera. Acting on this information, I wired Dr. Wise, at Toledo, on September 5th, to arrange for inspection of immigrants from Canada, at all lake ports, and requested Dr. Miller to act with Dr. Wise for that purpose. The health officer of Buffalo, Dr. Wende, was asked whether inspection of immigrants was being made at that point. He replied, "No European immigrants via Canada yet. Arrangements complete for thorough inspection and stringent quarantine against them." The health officer of Conneaut was wired to know if immigrants from Canada were coming through there by rail. He replied that there were none yet, but that the agent informed him that some were expected that night, and that he would inspect them. I wired approval and instructed him to detain suspicious immigrants. On the 7th of September I wired the secretary of the New York state board of health, to know whether inspection of immigrants from Canada, was enforced along New York's lake border. He answered, "All health officers along the border of this state are instructed to inspect."

Within a few days, the situation along the lake had apparently changed; the papers reported that the Provincial Board of Health of Quebec had adopted regulations prohibiting immigrants being brought into the Province, and the danger from this source appeared much less than was at first feared.

I requested a conference with Dr. Wise and Dr. Miller, and met them in Cleveland on September 8th. Dr. Wise reported that he had arranged for inspection of all Canadian vessels entering Toledo and Sandusky ports. It was learned that Mr. Garry, collector of customs for the district embracing all ports of entry from Conneaut to Lorain, had received instructions to co-operate with officers of the Marine Hospital Service and with local health officers, in the examination of all immigrants and their effects, entering the United States from Canada. Dr. Brooks, medical officer of the Marine Hospital Service at Cleveland, informed us that he had received instructions to inspect all vessels arriving at Cleveland from Canada, and that such inspection had already been established.

A similar inspection was being made by the national authorities at Toledo, Sandusky and Ashtabula, and as the danger from immigrants from Canada seemed to have been reduced to a minimum, Dr. Wise proceeded to Sandusky and Toledo and removed state quarantine at those points.

On September 2d, the papers reported that rags consigned for Cincinnati had arrived at Boston from Hamburg, and that these had not been disinfected by the Boston authorities.

I notified the health officer of Cincinnati of the report, but he was unable to learn anything concerning the rags; a search at Columbus among the freight offices revealed nothing in regard to them. Telegrams were sent to the general agent of the White lines at Buffalo, and tracers were sent east from there, but no rags had been shipped over these lines for Cincinnati. The health officer of Boston wired September 6th that no infected rags had been shipped from Boston to Cincinnati. On the 7th of September, the health officer of Cincinnati reported that a consignment of new cotton waste (not rags) shipped from Hamburg, August 6th, had arrived there, via Boston, consigned to Joseph Josephs & Bro., of Cincinnati, and that he had required the railway company to take them out of the city. On the 8th he reported that the cars containing cotton waste were side-tracked twelve miles from Cincinnati, and requested further instructions. He was requested to confer with Dr. Stanton, member of the state board of health, as to the disposition of the waste, and Dr. Stanton was asked to act with the local health authorities in the matter.

The following agreement with respect to the disposal of the cotton waste, was reached:

"At a conference this morning of Dr. Stanton, of the State Board of Health, and Dr. Prendergast, the health officer, it was agreed that the following requirements must be complied with, before the consignment of cotton waste, now on Pennsylvania tracks outside the city limits, and consigned to Joseph Josephs & Bro., could again be permitted to enter the city:

1. That a properly executed certificate showing exact date of departure from port of Hambug of Steamer St. Clear, be required.
2. That a sworn statement from the steamship agents at Boston be required stating that there was no cholera or other infectious disease on board the steamer St. Clear.
3. That the original bill of health, or a certified copy of same, from the Boston health authorities be required.

September 10th the following message was received:

PIQUA, OHIO.

DR. C. O. PROBST,

Man, wife and three children direct from Bremen cholera district, arrived here last night. I will disinfect baggage. Telegraph any suggestions. They are in country five miles.

F. E. KITZMILLER, *H. O.*

I wired him to thoroughly disinfect baggage and all effects of immigrants, and to inform me of name and date of arrival of vessel on which immigrants came. He replied "Arrived Baltimore September 7th, Steamer Stuttgart."

I wired commissioner of health at Baltimore to know if immigrants arriving by Steamer Stuttgart had been inspected and their baggage and effects disinfected. He replied: "Every passenger on Stuttgart was carefully inspected at this port."

This not being satisfactory, a telegram was sent to Dr. Wyman of the Marine Hospital Service, in regard to the Stuttgart's passengers—he replied: "No sickness on Stuttgart: baggage disinfected by steam by surgeon Hutton: immigrants under observation three days, beginning at Cape Charles, ending Baltimore."

As these immigrants had reached Ohio before the incubation peroid of cholera, counting from the date of disinfection, had passed, it was considered necessary to keep them under strict observation for a few days. The health officer of Piqua was requested to quarantine the immigrants and to inspect them daily for suspicious symptoms, until further notice. They were kept under observation until September 14th, when they were discharged. On the day the arrival of these immigrants was reported, I learned that a number of Russian Jews, who had arrived per steamship Stuttgart, had come to Toledo. The health officer of Toledo was wired to disinfect all their baggage, and detain immigrants for observation. I wired Surgeon-General Wyman that quarantine regulations at Baltimore for detaining immigrants, were not satisfactory to this board.

He replied: "Strict quarantine for Baltimore as well as other vessels now enforced at entrance to Cheaspeake. Quarantine boarding vessels empowered with rights of revenue cutters, and Baltimore authorities in harmony with Marine Hospital Service."

At the request of Dr. Lee, secretary of the Pennsylvania state board of health, I attended a conference of represenatives of that state and West Virginia, on September 11th. The meeting was held at the Hotel Anderson, Pittsburg. Those present were, Dr. N. D. Baker, secretary of the State Board of Health of West Virginia; Dr. Benjamin Lee, of Philadelphia, secretary, and Dr. J. H. McClelland, of Pittsburg, president of the State Board of Health of Pennsylvania; Dr. C. O. Probst, secretary of the State Board of Health of Ohio; Mayor Gourly; Chief Brown; Crosby Gray, of the department of public safety; superintendent Roger O'Mara; Dr. J. Guy McCandless; Dr. W. E. Mathews, of Johnstown; Dr. C, B. Dudley of Altoona, and Dr. J. R. Thompson of Pittsburg, medical Inspectors of the State Board of Health of Pennsylvania. Mayor Gourly presided, and Dr. Dudley was chosen secretary. Dr. Lee stated the object of the meeting. Being called upon to state what we were doing, I said: "Ohio has already recognized the importance of precaution against cholera. Since September 9, inspections have been made of all immigrants coming from Canada, and much has been done in the way of preparation. Ten points in the state have been selected as inspection points for the railroads. At these points inspectors have been appointed and nurses chosen. Arrangements have been made for the proper disinfection of persons and baggage, and for the erection of tents to be used as hospitals. The Adjutant-General has arranged to have men furnished to guard the camps and has agreed to furnish all necessary camp equipage and utensils. Measures are now being taken to protect the state along the lake front. The recent sanitary precautions taken in Canada are very encouraging and give ground for hope that danger from the lakes will be warded off. Ohio, of course, relies much upon Pennsylvania, since probably most of the danger will come from this direction. Ohio is, however, fully awake to the situation and will leave no means untried to keep cholera out of the state. Fortunately, through what is known as the emergency fund, we have funds sufficient for immediate needs, $10,000 having already been placed at the disposal of the State Board and more will be forthcoming if needed." Dr. Baker, of West Virginia, stated that since September 7th every train carrying immigrants had been stopped at the state border and inspected. "Those having certificates from the port of entry," he continued," are allowed to pass. All others are inspected carefully and furnished with clean bills of health before being allowed to go on." Dr. Baker thought each State Board of Health, should require every immigrant to be furnished with a clean bill of health, covering self and baggage, before allowing him to enter the state. The first state to receive immigrants could require it from the quarantine authorities, and this would insure a pass through all the states unless something should develop in transit. Illinois has already adopted this rule. A clean bill of health from some recognized health authority is essential before the immigrant can enter the state.

Dr. Lee stated that Pensylvania had not yet taken action similar to that taken by other states, because the state board had absolutely no funds at its disposal for such work. The "governor has promised" he continued "to furnish 100 tents if needed, but he likewise has no funds at his disposal for emergencies like the present. Pennsylvania has very few local health authorities and a meager organization, due to the same cause, lack of appropriate legislation. In case of an actual invasion by cholera the state board has power to appoint inspectors and establish quarantine, but there will be no funds to establish hospitals, pay nurses, or physicians or inspectors, or to disinfect and prevent the spread of the disease." Mayor Gourf recited the work accomplished in Pittsburg through the efforts of the emergency council during the past two weeks, saying all energy had been devoted to putting the city in good sanitary condition. The question of quarantine and hospitals for the protection of Pittsburg was thoroughly discussed, Drs. Probst and Baker protesting against the establishment of floating hospitals, which was then abandoned.

Following this meeting a conference of the secretaries of the state boards of health of Pennsylvania, West Virginia and Ohio was held Dr. N. D. Baker, of West Virginia, offered the following resolution which, was adopted; that the secretary, Dr. Probst, be instructed to communicate with the Secretary of the Treasury, urging him to have each immigrant provided with a certificate of his inspection made by the Marine Hospital Service, such certificates to be recognized by the State Boards of Health represented by this conference. The secretary was instructed to suggest to the Secretary of the Treasury the following information required as being essential to the matter by the State Boards: The name and sex of the immigrant; the port of departure and entry; name of vessel; duration of detention under observation after the last exposure to cholera; and destination. Dr. Lee offered this resolution which was adopted: That the conference suggests to the several boards here represented the expediency of adopting an order requiring every immigrant to be furnished with a certificate from the bureau of immigration or the United States Marine Hospital Service at his or her point of debarkation, and forbidding steam-boat or railroad companies to transport immigrants into or through their respective states when not provided with such certificates. And further, that whenever any board shall consider it necessary to establish an inspection station at the state line, the inspector shall be provided with a punch by which such certificates can be countersigned, if he deem the holder free from contagion. The conference then adjourned.

In accordance with the agreement made at Pittsburg, the following letter was sent to the Secretary of the Treasury:

COLUMBUS, OHIO, *September 12, 1892.*

To the Honorable CHARLES FOSTER, *Secretary of the Treasury, Washington, D. C.:*

SIR:—I have the honor to inform you that at a conference of representatives of the State Boards of Health of Pennsylvania, West Virginia and Ohio, held in Pittsburg, September 11th, 1892, for the purpose of considering measures to prevent the introduction of Cholera into their respective states, the following resolution was adopted:

RESOLVED: That the Secretary be instructed to communicate with the Secretary of the Treasury, urging him to have each immigrant provided with a certificate of his inspection, made by the Marine Hospital Service or other competent National authority. Such certificate to be recognized by the State Boards of Health, represented in this conference. The arrival of immigrants from Cholera infected countries occasions considerable public anxiety at this time, which would be greatly, if not entirely allayed if each immigrant was armed with a certificate from National authorities, showing that they had been so dealt with as to remove all danger of their carrying infection. Such certificates would also greatly facilitate the inspection of immigrants, and enable the Boards of Health to intercept and properly care for any who may have evaded quarantine regulations.

It was suggested by the conference that the following information concerning each immigrant should be supplied by his certificate of inspection:

1. Name and sex of immigrant.
2. Date of inspection.
3. Port of departure.
4. Port of entry.
5. Name of vessel.
6. Duration of detention under observation after last exposure to cholera.
7. Destination.
8. Name of inspector.

Trusting this matter will receive early consideration,

I have the honor to be,

Very truly yours,

C. O. PROBST, M. D.,

Secretary of the Conference.

In answer the following telegram was received:

WASHINGTON, D. C., *September 14, 1892.*

"Replying to yours of 12th inst. arrangements have been made for health certificates to immigrants."

O. L. SPAULDING, *Asst. Secretary.*

On September 14, by direction of the president, I attended a meeting of representatives of State Boards of Health, held at the Grand Pacific Hotel, Chicago.

At the afternoon session rules were adopted as follows:

Requirements of the State Boards of Health of the states of Illinois, Minnesota, Wisconsin, Iowa, Michigan, Kentucky, Missouri, and Ohio for the transportation of immigrant passengers and their effects into the states represented by said boards:

Rule 1. That this conference recommends that every immigrant passenger, before being allowed to land at any port of, or to cross the borders into, the United States, shall obtain a certificate from the health officer of the port or point of entry, or from a sanitary inspector of the United States Marine Hospital Service (where that service has charge of quarantine and disinfection), or from the quarantine officer at Grosse Isle, setting forth the name of such immigrant, whence emigrated, name and port of clearance of vessel, and the day of arrival at port of entry, the fact of the existence or non-existence of any infectious disease on said ship, the period of detention therefor at quarantine, local destination of the immigrant in any state or territory of the United States, and further certifying that he or she is free from any danger of conveying the contagion of Asiatic cholera or small-pox in person or effects, and that his or her effects and belongings have been subjected to approved processes of disinfection before being allowed to enter into the United States.

Rule 2. That a certificate of disinfection, as required in rule 1, signed by the official under whose charge the work of inspection and disinfection has been performed, and giving name of owner and date of issue, shall be conspicuously attached to each piece of baggage of such immigrant.

Rule 3. That any railway or transportation company accepting for transportation through the territory represented by this conference, immigrants not provided with certificates described in rule 1, or whose baggage does not bear the certificate provided for in rule 2, shall be subject to the quarantine rules of the states represented in the conference, and to any detention at the border, or within the territory of such state, for such thoroughness of inspection as the authorities of each state may deem necessary.

Rule 4. That immigrant passengers, if not conveyed on separate trains exclusively devoted to such service, shall be transported, when practicable, in separate cars to which access shall be denied to other passengers, and the disinfected baggage of such immigrants, other than the hand-luggage carried by them, shall not be accessible to them until they have arrived at their respective points of destination; and similar precautions shall be observed in the transportation of immigrant passengers by water.

Rule 5. That railroads or other transportation companies carrying such immigrants shall telegraph to the secretaries of State Boards of Health and to the designated health authorities at the distributing points, advising of the hour of arrival of such immigrants and in time sufficient to allow of the train being met by inspectors, and shall also telegraph notices to said authorities of any sickness occurring among such immigrants.

Rule 6. That the requirements set forth in rules 1 and 2 shall apply to passengers of any class arriving on a vessel infected with Asiatic cholera or small-pox.

Rule 7. That these rules shall take effect on and after the 20th day of September, inst.

W. A. Haskell, *M. D., President.*

The evening papers on the day the conference met in Chicago, reported five deaths in New York City from cholera.

I verified this report by telegrams to New York City, and wired Dr. Sharp, president, suggesting that a special meeting of the Board should be called on the following day September 15th. This was done. On the morning of the 15th, the medical inspectors already appointed, were notified to hold themselves in readiness to begin inspection of trains. The instructions adopted by the Board at its meeting September 16th, were printed on the 17th, and a copy was sent by special delivery letter to each medical inspector, and to the general managers and general superintendents of all railroads to be inspected. A copy of the quarantine rules adopted by the Board was also inclosed. A telegram was also sent to each of these persons notifying him that inspection of trains would begin on the following day, September 18.

Railway authorities, without exception, rendered every possible assistance in carrying out the rules and instructions of the Board; medical inspectors were furnished with transportation, and all railway employes were instructed to aid them and the state board of health in all ways possible.

Dr. Buechner, medical inspector at Youngstown, wired me September 19, that immigrants having proper certificates had been returned to Youngstown from Cleveland, after having been passed by him. On the same date, Mr. A. M. Tucker, general manager of the Erie Railway, wired me: "Please wire me what we shall do with any passengers whom the city authorities at Cleveland may refuse to allow to enter. Have there been quarantine camps established at the state frontiers on our line to which people can be sent for quarantine aid? If so, where?" On the previous day the mayor at Glenville wired: "By what authority does the health department of Cleveland stop trains in our village for examination of passengers? We oppose it strongly." To the latter I replied that Cleveland had no authority within the corporate limits of Glenville.

In regard to the authority of Cleveland to refuse immigrants passed by our inspectors, I could make no answer, but I laid the matter before the governor and attorney-general. The latter was of the opinion that the rules of the local health department could not be abrogated by this board. Acting on the advice of the governor, I went to Cleveland September 20th, and in company with Dr. Miller, called on Dr. Strong, health officer, Mayor Rose, and Mr. Gibbons, director of police.

Dr. Strong informed us that the quarantine rules of Cleveland had been adopted by authority of the director of police, who controls the health department, and that the health officer had no authority to modify them. The matter was laid before the mayor and director Gibbons; they informed us that their quarantine regulation had been adopted by the advice of a council of physicians called to their aid, composed of some of the oldest practitioners in the city. After some discussion they agreed to call a meeting of the advisory council on the following day and lay the matter before them. Notice was received a day or two later that the council deemed it unadvisable to modify the quarantine rules previously adopted. A conference was had with the railway authorities at Cleveland, and they agreed to notify their eastern agents not to accept immigrants for Cleveland. Later notice was received from Dr. Strong that the advisory council had reconsidered its action and had revoked the objectionable rule, and recommending the State Board to continue its inspection.

It was reported that the state authorities at Parkersburg, West Virginia, were inspecting all immigrants at that place who arrived by the B. & O. Railway, and it was thought possible, this being the case, that our inspection at Belpre might be relaxed. In answer to telegram, Dr. Baker, secretary of the State Board of Health, replied September 17th: "Inspection stations where trunk lines enter from the east, not at Parkersburg." Mr. J. O. Brown, chief of department of public safety, Pittsburg, in answer to telegram, on the same date, September 17th, telegraphed: "At present we are inspecting all immigrants arriving at Pittsburg regardless of destination." Thinking it might be possible to effect an arrangement with the authorities of Pittsburg, by which conductors of trains would be given a certificate answering for the health of the entire train, I went to Pittsburg, met Dr. McChandlass, health officer, and one of the medical inspectors. I was informed that all trains carrying immigrants were met outside of the city, and the immigrants inspected; those bound for Pittsburg were rigidly inspected, and certificates were required of them, but those destined for points farther west were allowed to pass, provided they presented no symptoms of illness. This was not deemed sufficient protection for Ohio to warrant any relaxation of inspection at the state line.

Information was received about this time that many immigrants were coming from Baltimore without certificates. The health commissioner of Baltimore was wired on the 18th, that Ohio would quarantine against Baltimore unless immigrants for Ohio were given proper health certificates. In answer to the question: "What is meant by proper health certificate?" he was informed that a certificate from the Marine Hospital Service, or other national authority, or from proper quarantine officer at Baltimore, was required. The B. &. O. Ry. officials were notified not to accept immigrants from Baltimore without such a certificate.

It was reported that trains were coming through Bellaire without inspection. I reported the matter to Dr. Sharp, president, who instructed me to go to Bellaire and investigate, and if necessary appoint another inspector at that place. I went to Bellaire September 18th and fully investigated the report. It was learned that several trains from Washington, D. C., had passed through Bellaire without inspection, but this was due to the fact that G. A. R. excursionists were returning in such numbers from that city that seven or eight sections were being run under one number, and trains were coming through at all hours. So far as could be learned, no immigrant trains had been missed. The report probably grew out of the fact that the medical inspector had not made himself known to the conductors on all trains. His instructions were to inquire of conductors of trains touching the health of passengers and crews, but the conductors are changed at Benwood, across the river from Bellaire, and often the conductor who had brought the train to this point, had left it before the inspector boarded it. There had apparently been no neglect of duty, and no change was made in the medical inspector.

Information being desired concerning safety of crews of vessels from infected ports, Dr. Wyman of the Marine Hospital Service was asked what precautions were being taken. He replied September 12th: "At national quarantines dunnage of crews carefully looked after; other quarantines governed by their own laws, but if crews are from infected places, disinfection is required—department circulars."

The medical inspector reported that immigrants coming through Bellaire on B. & O. R'y, were not all carried in special cars, as required by quarantine rules. The same complaint was made by the inspector at Steubenville in regard to Pan Handle trains. Mr. J. T. Odell, general manager of the B. & O. R'y, Baltimore, was notified and replied: "I have your telegram and am surprised to learn that the immigrants are not being forwarded to you in special cars, as my instructions to all concerned are very clear on this point; will have the matter given specia attention." Mr. Miller, general manager of the Pennsylvania R'y at Columbus was verbally notified of the complaint at Steubenville, and at once telegraphed instructions to have the matter corrected.

During this period, outbreaks of cholera were reported at various places, some in our state; in all instances inquiry by telegram was promptly made, and the report corrected.

Dr. Joseph L. Anderson of Cincinnati, ex-member of the Board, telegraphed from New York City, September 16th, offering to assist the Board in any manner possible. I requested him to send daily reports of the situation in New York City, and this was done during the period of greatest excitement.

Daily reports were also received from Dr. Cyrus Edson, chief of the department of sanitary inspection, and from Mr. Emmons Clark, secretary of the New York City Board of Health.

The thanks of the Board are due to each of these gentlemen for many courtesies extended.

On September 15, Dr. J. N. McCormack, secretary of the Kentucky State Board of Health, telegraphed: "Can protect you on our eastern border if you agree to same for us on your border. I recommend inspection and notification to authorities, instead of quarantine." To this I replied assuring co-operation, and reported what action the Board had already taken.

With the enforcement of the twenty day's detention of vessels carrying immigrants, it was noted that large numbers of second-cabin passengers were being brought from European ports, and it was reported in the newspapers that immigrants, who ordinarily would have taken steerage passage, were evading quarantine in this manner. Aside from this danger, it appeared that inspection of trains in Ohio might safely be withdrawn, provided that quarantine by national, state, and local authorities at the seaboard, was being properly enforced. The matter was thoroughly discussed with the president, Dr. Sharp, and with a view of saving quarantine expenses, I was directed to visit New York and such other places as might be deemed advisable, and learn, if possible whether quarantine could be safely withdrawn at once. I went to New York City September 29th, and met a number of the health officials of the city. I found that the arrival of immigrants had practically stopped; Camp Low was abandoned on the day of my arrival, and but little further danger from cholera, during the present year, was apprehended. The health authorities of New York City have the same power to quarantine against immigrants released from the state quarantine, that our state has, and if they are not satisfied that immigrants have been detained a sufficient length of time, or that their baggage has been properly disinfected, they can refuse them admittance to the city. Dr. Edson informed me that the remaining immigrants, who were being released from quarantine, were considered perfectly safe, and that many of these were taking up residence in the city. Although the quarantine officer of the port of New York is ex-officio a member of the city board of health, the board is entirely independent in its action; and if the local health officials, having every opportunity for accurate information, and with the immense interests they had to guard, felt there was no longer any danger, or but little, from immigrants, it seemed that so far as this port was concerned, our inspection of trains at state lines might be withdrawn. From New York, I went to Washington and met Dr. Wyman of the Marine Hospital Service. Dr. Wyman assured me that the President's order restricting immigration would be strictly enforced for some time, and possibly all winter. His attention was called to some exceptions known to me, and he explained that foreign regulations respecting immigration impose a heavy penalty on vessels which fail to carry out contracts to carry immigrants, and that where it was shown that immigrants had been booked prior to the receipt of the President's order, special consideration was given to such vessels; but that immigrants shipped under such conditions were not discharged until every precaution, including necessary detention, had been taken. Quarantine for the ports of Baltimore and Philadelphia, he said, was reinforced by the Marine Hospital Service, all ships being made safe before being turned over to the local authorities. An officer of the Marine Hospital Service was stationed at Boston, and quarantine at that port was conducted so as to be satisfactory to the national authorities. I was of the opinion that Ohio could with perfect safety, withdraw her inspection of trains; Dr. Sharp was wired to this effect, on October 3d, and by his direction inspection of trains was withdrawn on the following day.

Happily, our country has escaped an epidemic of cholera which so seriously threatened us a few weeks ago, but the opinion of all who are entitled to speak on the subject, seems to be that our danger next year will be greater than the danger just passed. As the guardians of the public health, it behooves this Board to take advantage of the time during winter months to make such preparations as will place the state in the best possible condition to resist the ravages of the disease, should these predictions unfortunately prove to be true.

INVESTIGATION OF AN ALLEGED NUISANCE AT ATHENS, OHIO.

A communication was received from the board of health of Athens in August stating that the Hocking river was being polluted by the sewage from the Athens insane asylum; and that the public health was thereby endangered, several cases of typhoid fever and other cases of sickness which had recently occurred, being pronounced by the physicians of Athens as probably due to this cause, and the State Board was requested toinvestigate.

I referred the matter to Dr. Sharp, president, and was instructed by him to visit Athens and investigate the complaint.

I went to Athens August 7th, and was met by the mayor, Mr. Minturn, the health officer, Dr. Alderman, and the members of the board of health. Accompanied by these gentlemen, I inspected the river and alleged source of complaint, and also made a somewhat rapid but extended inspection of the sanitary condition of the city.

Athens is located on a series of hills in a horseshoe bend of the Hocking river, which almost surrounds the town. Two mill-dams are built across the river—a stream easily fordable in dry weather—one above the town and the other below; the distance between the dams being about a mile and three-quarters.

On the date of my inspection the river, owing to recent rains, was quite muddy, and comparatively high, and a good volume of water was passing over the lower dam. No bad odors were preceptible along the river bank. It was stated, however, that in long continued dry weather the river is reduced to a mere rivulet, so that the water between the dams is almost completely stagnant, and that at such times there is great annoyance from bad odors. The Athens insane asylum is situated on a hill rising from the bottom lands of the Hocking river, about one mile from Athens, the river flowing between the two, but close to the town. The sewage from this institution, with nearly one thousand patients and employes, is all discharged into the Hocking river between the mill-dams, at a point opposite to the town, and probably a half mile above the lower dam. This has been done for the past ten years or more. In addition to the filth entering the river from this source, there is a sewer from the court house, several dwellings being connected with it along its course, which empties into the city. There are no other sewers, but the surface drainage from more than three-fourths of the town enters the river between the dams. During hot dry weather when the filth is nearly all retained in a comparatively small body of stagnant water, there must necessarily be more or less of a nuisance. Another nuisance, however, is encountered in high water. A part of the town is built on the river bottoms, and the obstruction offered by the lower dam, which is about eight feet high, causes this land to be overflowed. The state has also been injured in this manner, for the overflow frequently covers the road leading from the town to the asylum, the pike built at the expense of the state, having been torn out and washed away on more than one occasion.

The damming back of the water also intereferes with the discharge of the street gutters carrying surface drainage, which adds to the evil results. It is estimated that removing the lower dam would lower the high water mark of the river not less than four feet, which would prevent, except in unusually high water, the overflow of most of the low lands, including the roadway to the insane asylum.

This complaint, or cause for complaint is, however, no new one, as the lower dam has been in existence for forty years or more.

A few weeks before my visit the mill at the lower dam was destroyed by fire; and as the time seemed most favorable for the removal of the dam, the local board of health has taken hold of the matter.

A meeting, attended by the board of health and several interested citizens, was held in the afternoon, and the question of abating the nuisance was discussed. The board urged that as the state was responsible for creating the nuisance, it should pay for its abatement; and this, in their opinion, could only be found by removing the lower dam.

I stated that the state board of health had no authority to undertake such a measure, but that if it were decided that this was the proper plan for abating the nuisance, the board would co-operate with the local board and citizens of Athens in urging the Legislature to make necessary appropriations. It was stated that this would not be more than five thousand dollars.

I pointed out, however, that the asylum's sewage was not alone responsible for the nuisance, as part of the filth in the river came from Athens; and furthermore, that the removal of the dam would probably not entirely remove the trouble, as there would likely not be a sufficient flow in the river, in dry weather, to remove the sewage and other filth entering the stream.

It would be possible to deliver the sewage from the asylum at a point in the river below the dam, but this would necessitate building a new sewer over a mile in length, crossing the river once, and would require lifting the sewage by pumping. This plan is hardly practicable. It is possible that the sewage might be disposed of by broad irrigation, as there are several cultivated fields connected with the asylum, and the sewage could probably be discharged into the river during the winter months without offense.

The owners of the mill sight intend to rebuild at once, and a committee of the board of health was appointed to learn what damages would have to be paid for removing the dam. The question of raising the money locally, or waiting for the convening of the Legislature and asking the state to pay damages, was left open until the committee could report.

There have been a number of cases of sickness in Athens during the summer, and I made a partial inspection of its sanitary condition, and a report to the board at its meeting. Some of the conditions found are certainly inimical to health. Their greatest danger is the liability of pollution of their water supply, which is entirely from private wells. The water-bearing stratum is a loose shale, many feet in thickness, and wells are liable to receive drainage from great distances. The town being built on hills, the houses are placed at different elevations, so that many wells are at or near the bottom of hills thickly settled. There are no sewers except the one mentioned from the court house, and excrement is disposed of by the vault system. Vaults are not required to be water tight, and being dug into shale in many places, must leach into the ground for considerable distances.

There is much greater probability of the cases of typhoid fever, reported in Athens, having been due to contaminated wells, than to the pollution of the river. Every uncemented privy vault in the town should be condemned, cleaned and filled; and, until sewers are introduced, I recommend that the board of health should prohibit the disposal of human excrement except by the dry-earth plan, or by cemented watertight vaults.

There are many wells in Athens which, on account of position and soil formation, will always be liable to pollution, even with the abolition of uncemented privy vaults, and the public health would be greatly benefited by the introduction of a public water supply, provided a suitable source can be found. The Athens insane asylum, some years ago, sunk a large well near the river, which furnished an adequate supply of fairly pure water for one thousand people, and the same source would possibly furnish a supply for Athens.

The natural conditions for surface drainage are excellent for most parts of the town, but the street gutters were found overgrown with weeds in many places, and containing considerable filth. The action of the dam in backing up the water of the river, so as to impede the drainage of the bottom lands, has been spoken of. Nothing further has been heard from the local board.

ANNUAL REPORT

OF

Local Boards of Health

FOR THE YEAR ENDING

OCTOBER 31, 1892.

Questions.

1. Name of town.
2. Estimated population.
3. Name of person making report.
4. What is the present sanitary condition of your town, and what are its greatest sanitary defects?
5. What measures were taken by your board, or other public authorities, to prepare for cholera?
6. What per cent. of your population use wells for drinking water?
7. How many (estimated) uncemented privy vaults or cess-pools are there in your town?
8. Does the board of health regulate the distance between wells and privy vaults and cess-pools?
9. If so what is the distance allowed?
10. Are there any wells in your town which you have good reason to suspect are being polluted by drainage from privy vaults or cess-pools?
11. Has your board ever closed a well on account of suspected contamination?
12. If so, what steps were taken to bring this about?
13. Have the orders of the board been enforced without difficulty?
14. How many cases and deaths were reported during the year from the following diseases: Diphtheria, scarlet fever, typhoid fever, measles and whooping cough?

Any further information in regard to the work of your board or sanitary condition of your town will be gladly received.

ADA—Pop., 2,300—W. H. Morrow, H. O.

4 Fair at present.
5 No special act.
6 All; we drill into the rock and tube and shut out all water above rock.
7 About five hundred.
8 Yes, as much as possible.
9 On town lots we get the vault as far away as possible.
10 None.
11 One for typhoid fever.
12 We poured crude carbolic acid all over the ground around the well and had it abandoned for one year and then cleaned thoroughly, after which it proved all right.
13 Yes.
14 Scarlet fever, 14 cases; typhoid fever, 6 cases, 1 death; measles, 9 cases.

Ada is situated in a sort of a basin and it is very hard to drain as we have to go nearly one and one-half miles for an outlet, then tile. Our council has projected several routes for additional sewerage but as yet have not adopted any of them.

The Board of Health last spring submitted the question of prohibiting the keeping of hogs within the village limits and after a hard contested election a majority voted for the hog. So the board has tried to regulate them, and at the same time to educate the people that they are better than the hog.

ADDISON—Pop., 80—Hudson Maddy, Trustee of Township.

4 (1) Good. (2) Shallow, open, permanent privies.
5 Not any.
6 About 60 per cent.
7 We have not any uncemented privy vaults.
8 They do not. Such matters rest in the judgment of the owners.
10 There are two quite suspicious.
11 Never has.

ALLIANCE—Pop., 9,000—Dr. P. W. Welker, H. O.

4 The sanitary condition of this town at present is in very fair condition. The greatest sanitary defect is want of proper sewerage, we being almost entirely without any.

5 The board proceeded at once to inspect all large boarding houses (especially occupied by foreigners), water closets, alleys, cellars, yards, etc., and had them cleaned and disinfected.

6 Three-fourths.
7 Eight hundred to 1,000.
8 No.
10 No.
11 No.
13 As a rule.
14 Scarlet fever, ten cases, two deaths; typhoid fever, don't know, five deaths.

The city of Alliance is cleaner and in better sanitary condition than ever before and the board of health is becoming more in earnest and stricter.

AMELIA—Pop., 500—Dr. W. B. Doan, H. O.

5 There has been drainage and a general cleaning up through the town. I believe the sanitary condition is very good, with the exception of a canning factory or rather the dump or drainage from it.

6 Fifty per cent.
7 One fourth uncemented privy vaults.
8 I believe the distance to be about two hundred feet.
10 No.
11 No.

No death from infectious diseases.

ANTWERP—Pop., 1,800—Jesse H. Bond, H. O.

4 Sanitary conditions good. The defect is the old canal filled with sawdust.
5 We did as directed by the State Board of Health.
6 One-half.
7 There is not one cemented vault in the town. The most of them are on the top of the ground.
8 No.

10 Yes, plenty of them.
11 No.
13 Yes.
14 Diphtheria, 34 cases, 26 deaths; typhoid fever, 8 cases, 6 deaths.

ARCANUM—Pop., 1,400—D. J. Robbins, H. O.

4 Fair. Defects, privy vaults and drainage.
5 The board ordered every person to clean his premises.
6 All.
7 Only four or five cemented in corporation, balance boards, etc.
8 No.
10 Yes.
11 No.
13 Yes.
14 Scarlet fever, 2 cases, 1 death; typhoid fever, 1 case.

ARCHBOLD—Pop., 900—Henry Dimke, H. O.

4 Fair, excepting there is an open ditch along the railroad in bad condition.
5 None, so far.
6 All of them.
7 All.
8 No.
10 No.
11 No.
13 Yes.
14 Diphtheria, 11 cases, 3 deaths; scarlet fever, 10 cases, 1 death; typhoid fever 17 cases, 2 deaths.

The board of health has been endeavoring to improve the sanitary condition of this place with fair success.

ASHLAND—Pop., 4,000—Dr. B. Myers, H. O.

4 Generally good. A so-called sewer on Second street is its greatest defect and the privies being uncemented.

5 The streets and alleys were thoroughly cleaned, quite a number of privies condemned and removed.

6 95 per cent.
7 There are no cemented privies or cess-pools.
8 It does not.
10 Yes.
11 No.
13 Yes.

The physicians have not reported deaths and births to the Board of Health as there is no ordinance compelling them to do so.

ASHVILLE—Pop., 550—J. Johnson, H. O.

4 Quite good. Our greatest defects seems to be in our system of privy vaults and hog pens.

5 None special. Some extra effort in cleanliness.
6 100 per cent.

7 75 or 80 per cent.
8 Yes.
9 50 feet.
10 Yes.
11 No.
13 Yes.
14 Whooping cough, 6 cases.

Had quite a nuisance with hogs but all have been disposed of.

Some filthy wells have been ordered cleaned and orders obeyed.

ATHENS—Pop., 3,000—Dr. W. N. Alderman, H. O.

4 Sanitary condition at this time pretty fair; defects, old privy vaults and impure drinking water.

5 General cleaning up of the town and disinfection.
6 Nearly the entire population.
7 All except perhaps three or four.
8 No.
10 Don't know that there is, but I fear so.
11 Not to my knowledge.
13 No.
14 Typhoid fever, 3 cases.

AVONDALE—Pop., 5,000—Joseph A. Brown, H. O.

4 Good.

5 We are having every vault and cess-pool cleaned, allow no more built, and make every house connect with sewer which we have in nearly every street, and fill every vault with clean earth.

6 There are about six wells in the whole town.
7 About one hundred and fifty.
8 We do not allow any more vaults or cess-pools built.
10 None.
11 No.
13 Yes.

14 Diphtheria, 9 cases, 3 deaths; scarlet fever, 26 cases, 1 death; typhoid fever, 6 cases; measles, 27 cases.

Our water supply comes from the Ohio river and is the same as that of Cincinnati's supply.

BALTIMORE—Pop., 600—Dr. B. K. Thomen, H. O.

4 Good; greatest defects, a slaughter house not always quite right, better now however; some privies have been complained of and a few pig sties.

5 Nothing more than seeing that streets and alleys were clean.
6 About seventy-five per cent.
7 I have no data to judge by but think twenty-five.
8 No.
10 None.
11 No.
13 No.

BARNHILL—Pop., 500—Dr. R. A. Douglas, H. O.

4 The present sanitary condition of our village is good. The defects are general.

5 We did not allow anyone that was not well known by us to enter town, and if they did get in here, we sent them away as soon as they could go.

6 About 90 per cent.

7 I don't know of one cemented one, but we are now trying to have it done.

8 Yes.

9 Fifty feet.

10 Not that I know of.

11 Not since I have been here.

13 Yes.

14 Diphtheria, 10 cases; scarlet fever, 3 cases; typhoid fever, 8 cases, 7 deaths.

BEDFORD—Pop., 1,100—L. J. Gordon, H. O.

4 Very good. Want of sewer.

5 In September we made a canvas of the town and ordered every one to clean yards and privies.

6 All.

7 None, we use drawers.

8 No.

10 Yes.

11 Yes.

12 The water was analyzed and considered unfit for use.

13 Yes.

14 Diphtheria, 2 cases; scarlet fever, 17 cases; typhoid fever, 4 cases; measles, 12 cases; whooping cough, 6 cases.

BELLEFONTAINE—Pop., 6,000—Dr. C. W. Heffner, Secretary.

4 Fairly good. The defects are want of sewerage and uncemented privy vaults.

5 Our board took steps and compelled the cleaning of all alleys, removal of all garbage and a general town cleaning, though we at no time allow our town to become a dirty town.

6 Ninety-five per cent.

7 About one thousand.

8 Yes.

9 Fifty feet.

10 Yes.

11 Yes.

12 Simply an order to abate the nuisance, stating in the order what the nuisance consisted of.

13 Virtually without difficulty and every day with less difficulty.

14 Diphtheria, 12 cases, 2 deaths; scarlet fever, 19 cases; typhoid fever, 16 cases, 2 deaths; measles, 1 case; whooping cough, 7 cases.

The reports of deaths by the physicians are not yet very well observed. They all report their infectious and contagious cases, but not their deaths.

BELLEVUE—Pop., 4,000—John Earls, H. O.

4 Sanitary condition fairly good. Lack of sewerage is our greatest sanitary defect.

5 None.

6 15 per cent.

7 Nearly all.

8 Yes.

9 Fifty feet.

10 We think that all wells are liable to being polluted owing to the peculiar under drainage.

11 No.

13 No.

14 Diphtheria, 4 cases, 1 death; scarlet fever, 1 case; typhoid fever, 5 cases, 2 deaths.

The people mostly use cistern water for domestic purposes. The public water works are from two reservoirs—about 18 acres of land; water brought to them in ditches.

BEREA—Pop., 2,800—T. G. Card, H. O.

4 Privies and hog pens and garbage promiscuously thrown into back yards and about peoples' premises.

5 We have given public notice for the citizens to thoroughly clean up their premises, sinks and cellars, which we believe was fairly well done.

6 All but one or two.

7 All but one.

8 No.

10 We are not certain of any.

11 No.

13 No.

14 Diphtheria, 13 cases, 6 deaths; scarlet fever, 2 cases, 2 deaths; typhoid fever, 1 case, 1 death.

We have been doing all that we could to improve the sanitary condition of our town, but we find a great many people are awfully ignorant. We hope by the proper education of the people to do better work in time to come.

BETHEL—Pop., 800—Dr. W. W. Smith, H. O.

4 Fairly good. Creamery draining offal in creek; the only drainage the town has.

5 This place was given a thorough cleaning; privy vaults cleaned and disinfected; weeds mowed; all decaying animal and vegetable matter removed from corporate limits of village and drainage made as near perfect as possible; are laboring under difficulties owing to inco-ordination of council.

6 At least 90 per cent.

7 What few vaults there are, are not cemented; with few exceptions are built on surface.

8 No.

9 Do not think there is a well within 100 feet of privy.

10 None.

11 No.

13 Yes, with very few exceptions.

14 Diphtheria, 1 case; scarlet fever, 2 cases; typhoid fever, 1 case.

This report only covers the time since the organization of our Board, July 18, 1892.

BLANCHESTER—Pop., 1,500—Dr. S. B. Judkins, H. O.

4 Our town is in good sanitary condition. Want of sewerage is our great trouble.

5 Issued an order for a general clean-up and the people went to work and cleaned up the town.

6 80 per cent.

7 None allowed.

8 Yes; none allowed; no digging holes in the ground for privies.

10 No.

11 No.

12 No cause for complaint.

13 Yes, except in one case.

14 Diphtheria, 14 cases, 6 deaths; typhoid fever, 1 case, 1 death.

BLOOMDALE—Pop., 700—Dr. G. H. Riley, H. O.

4 The present sanitary condition is good. This year the town constructed a good sewer.

5 We had the town cleaned of all trash, and privy vaults disinfected with common lime.

6 All use well water.

7 All are uncemented.

8 No.

10 None.

11 No.

13 We have met with considerable opposition.

14 Diphtheria, 5 cases, 2 deaths.

Our board was only established the latter part of last year. It being a new thing it met with considerable opposition from families afflicted with scarlet fever. The probabilities are that we will have less trouble in the future.

BLOOMINGBURG—Pop., 600—J. J. Pinkerton, H. O.

4 Is as good as circumstances will admit of. Everything cleaned up as it accumulates. Sewers and drainage of all kinds kept clean.

5 By keeping premises clean and adhering strictly to cleanliness.

6 90 per cent.

7 There is not one in the place cemented; wooden frames sunk in them.

8 Not as yet but the distance is about 80 feet.

10 There are a few but condemned.

11 Yes.

12 By notifying the owner to discontinue the use of the water until renovated.

13 Yes.

Cleanliness is our motto and we aim to stick to it.

BLOOMVILLE—Pop., 850—Dr. J. W. Hoy, H. O.

4 Good, and has been for past eight months. The greatest sanitary defects lie in the carelessness of many of the citizens in not cleaning and disinfecting privy

vaults and pig pens. With one more sewer the town would be well drained. Have had no contagious or infectious case to report for months.

5 General cleaning up and liberal use of disinfectants.

6 Not 3 per cent.

7 Not more than 2 or 3 privy vaults. None were more than 4 feet deep. Cess-pools none.

8 Yes, by the rules adopted by board.

9 50 feet.

10 One, which was ordered not to be used.

11 No.

13 All excepting one case, when health officer had the man brought before the mayor.

14 Diphtheria, 10 cases, 2 deaths.

BLUFFTON—Pop., 1,400—Dr. F. J. Baldwin, H. O.

4 The sanitary condition is good, the only drawback to thorough sanitary condition of the town is the want of proper sewerage on Jackson street.

5 The board appointed a committee of three members with sanitary police and proceeded to have every street and alley kept scrupulously clean, all cess-pools and privies cleaned and disinfected and have been kept in that condition since.

6 All use wells.

7 I think there are only two in the town; they have been condemned.

8 No.

10 But two; they have been condemned.

11 Yes, two.

12 Tbe board investigated the premises and ordered the Health Officer to put lock on the privy with a notice of condemnation.

13 There has been no difficulty.

14 Typhoid fever, 2 cases.

There has been no prevailing sickness, nothing of an epidemic character. There has been but 9 deaths for the year ending October 1st, four from phthisis, three from valvular disease of heart and 2 pneumonia. The two cases of typhoid fever were very light.

BOND HILL—Pop., 850—G. Perin, H. O.

4 The present sanitary condition of the village is good. Its greatest sanitary defect is want of proper drainage.

5 All the streets and alleys were cleaned, every vault in the village was disinfected, every house in the village was visited by some member of the Board of Health. They found cellars and yards in a good, healthy condition.

6 A very small per cent. Cistern water is used almost exclusively for drinking.

7 Not one of them is cemented.

8 They do.

9 Twenty feet.

10 None.

11 No.

13 To a certain extent they have.

14 Scarlet fever, 15 cases; typhoid fever, 1 case, 1 death; measles, 6 cases.

BOWERSTON—Pop., 800—Dr. E. E. McPeck, H. O.

4 For the number of inhabitants sanitary condition is only moderately good greatest sanitary defect is bad drainage.

5 A general cleaning of the streets and alleys.
6 Only a *very few*, possibly five or six families.
7 All are uncemented.
8 No.
10 Yes.
11 No.
13 No.
14 Diphtheria, 7 cases; scarlet fever, 2 cases; typhoid fever, 3 cases.

BOWLING GREEN—Pop , 5,000—Alonzo Ordway, H. O.

4 Sanitary condition first class; principal defect not sufficient drainage.

5 General cleaning up ordered; after three days committee went again over ground and that not found strictly sanitary cleaned immediately.

6 99 per cent.
7 One hundred.
8 Yes.
9 No distance fixed at present, but will be fixed shortly.
10 No.
11 Yes.
12 Doctor examined water, and well closed by action of board.
13 Generally.
14 Scarlet fever, 1 case; typhoid fever, 5 cases, 1 death.

BROOKVILLE—Pop., 900—A. C. Berst, H. O.

4 Condition is good; the greatest sanitary defects are the privy vaults, built previous to the organization of the Board of Health.

5 A general cleaning up of streets, alleys, etc.
6 One hundred.
7 Fifty.
8 Fifty feet is the distance allowed between wells and privy vaults.

10 None known of; the nature of the soil is such that it is a hard matter for vaults or cess-pools to injure wells.

13 Yes.
14 Typhoid fever, 1 case; measles, 1 case; whooping cough, 4 cases.

You may judge in regard to the health of the village when there was not ;one death in the village within one year.

BRYAN—Pop., 3,500—S. T. Martin, H. O.

4 The sanitary condition of our town is good.
5 Not any.
6 There are one-half who use fountain water and one-half drove wells.
7 Twelve.
8 No.
10 None.
11 No.
13 There are no orders adopted by the board to enforce.

14 Diphtheria, 12 cases, 2 deaths; scarlet fever, 1 case; typhoid fever, 6 cases, 1 death; whooping cough, 2 cases.

The board has not had but three meetings for two years. They adopted some rules in regard to sanitary condition of our town, but the council failed to pass them. The board became discouraged and has not done its duty.

BUCYRUS—Pop., 7,000—Dr. C. H. Noblets, H. O.

4 Our town is in good condition at present. Hog-pens, privies and garbage.

5 We cleaned up all the streets, alleys, hog-pens, and privies; had wells cleaned out; all the garbage an grass burned. We have a dumping ground about a mile from the city and bury all garbage that will not burn.

6 About 75 per cent.

7 About three hundred not cemented.

8 Yes.

9 Sixty feet.

10 There was, but we had them cleaned out and privy vault cemented.

11 No, but had it cleaned out.

13 Yes.

14 Diphtheria, 12 cases, 2 deaths; scarlet fever, 5 cases; typhoid fever, 20 cases, 2 deaths; measles, 4 cases; whooping cough, 25 cases.

BYESVILLE—Pop., 1,000—M. W. Peters, H. O.

4 Bad.

5 None.

6 One hundred.

7 About seven hundred, all that we have.

8 No.

10 Yes.

11 No.

13 No; can't enforce them on account of council won't stand to the order.

14 Diphtheria, 3 deaths; typhoid fever, 10 deaths.

How can the board regulate when the council won't allow their bills? and how can the board force them to pay the same?

CADIZ—Pop., 1,800—Dr. M. J. Lyons, H. O.

4 The present sanitary condition is as good as can be obtained under existing circumstances. The defects are: imperfect drainage and the privy vault nuisance.

5 Inspection of premises in a number of cases where proper sanitary measures were not observed; a notice in the local newspapers to clean up and disinfect with lime.

6 The entire population.

7 But few are cemented.

8 No such orders have ever been issued.

10 None known, but they doubtless exist.

11 No.

13 Yes.

We have had no deaths from contageous or infectious diseases during the year; there has been a few cases of scarlet fever in a light form during the entire year; no deaths; diphtheria none; every house where scarlet fever was reported, was promptly placarded.

CALDWELL—Pop., 1200—Dr. O. O. McKee, H. O.

4 The sanitary situation of Caldwell is I might say, first class the only draw back this summer was the hog pens—and at our last meeting of council we passed an ordinance prohibiting the keeping of a hog pen within 200 feet of any occupied dwelling.

5 None out side of keeping our town clean.

6 One hundred per cent.

7 We don't allow a privy vault inside of the corporation.

13 This year there has been no objection raised.

14 Typhoid fever, 9 cases, 3 deaths.

We have a sanitary police who keeps a horse and cart, expressly to clean up with, we pay him a salary and also see that he gets his pay for all cleaning up he does where the property owners refuse to pay him we pay him out of sanitary fund then charge it up to property owner by having it placed upon tax duplicate and collect it as a tax.

CALEDONIA—Pop., 770—Preston Smith, H. O.

4 Sanitary condition fairly good. The greatest sanitary defects are keeping privys and hog-pens clean.

5 Nothing more than a general clean up.

6 About 99 per cent.

7 We have no cemented privy vaults all dry earth floors, or drawers.

10 None.

11 No.

13 Generally.

14 Diphtheria, 26 cases, 2 deaths.

CAMBRIDGE—Pop., 6,000—Dr. H. H. Veitch, H. O.

4 Good.

5 A general cleaning of streets, privy vaults, etc.

6 Ninety-five per cent.

7 Fifty per cent.

8 Yes.

9 Fifty feet.

13 Yes.

I have just been appointed to the position and am getting, every thing in good shape.

CANAL DOVER—Pop., 3,500—E. Amick, H. O.

4 The sanitary condition is good; there are no sanitary defects that I know of.

5 We issued posters requesting the citizens to clean up their premises and cellars and use plenty of lime.

6 We have only well water in our town for drinking.

7 There are no cemented privy vaults in town.

8 No.

10 None at present.

11 Yes one and it was filled up and abandoned.

12 The Board of Health condemed the well and ordered the owners of the well to fill it up.

13 The orders of the Board of Health were always obeyed.

14 Diphtheria, 60 cases, 10 deaths; scarlet fever, 5 cases; typhoid fever, 5 cases, 2 deaths; measles, 20 cases; whooping cough, 40 cases.

CANAL FULTON—Pop., 1,400—Jos. Miller, H. O.

4 At present in good condition; no disease of any kind prevailing, has been two deaths the past year–cause old age, and general debility; greatest defects are cess-pools, and canal during summer season.

5 A general renovating of cellars and cess-pools.

6 One hundred per cent.

7 None cemented, accept public school building.

8 Length of lots does not require it.

9 Has been no action taken.

10 Yes, one.

11 No.

12 No action taken yet.

13 Yes.

We expect to adopt a code of rules and regulations at once.

CANAL WINCHESTER—Pop., 800—Dr. L. W. Beery, H. O.

4 The sanitary condition is pretty good, the greatest defect is the uncemented privy vaults.

5 An inspection of the town was made by the Board of Health in September of this year and several nuisances discovered and abated. The Board of Health had been defunct for more than one year.

6 One hundred per cent.

7 There are none cemented.

8 Yes, fifty feet.

9 Fifty feet.

10 I fear so.

11 No.

13 Have had but little difficulty.

14 Measles, 10 cases; whooping cough, 5 cases.

CANFIELD—Pop., 800—A. D. Wood, H. O.

4 Very good.

5 None.

6. One hundred.

7 No cemented privy vaults.

8 No.

10 I do not know of any.

11 No.

13 Yes.

CARTHAGE—Pop., 2,400—Harry Ross, H. O.

4 The town is in a splendid sanitary condition. We have a first-class garbage system and allow no hogs to be kept nearer than 200 feet from any dwelling.

5 We had to take no action as the town was and still is in as good a sanitary condition as could be.

6 Very few as we have splendid water from our water works.

7 Very few. All vaults and cess-pools are 10 feet deep, and walls of stone or brick 10 inches or more in thickness.

8 We place them just as far as possible.

9 About 30 feet.

10 No.

11 No.

12 No.

13 We have had no trouble and have the best wishes of every one in the town.

14 Diphtheria 26 cases, 7 deaths; scarlet fever, 21 cases, 2 deaths; typhoid fever, 2 cases, 1 death; measles, 2 cases; whooping cough, 5 cases.

CEDARVILLE—Pop., 1,500—W. G. Homan, Secretary.

4 Present sanitary condition is excellent.

5 A general thorough cleaning up.

6 All use well water and nearly all wells are drilled in lime rock.

7 Fully two-thirds are uncemented.

8 Yes.

9 Fifty feet.

10 Yes, one; but it is not used for any purpose.

11 No.

13 Yes.

14 Typhoid fever, 1 case; measles, 2 cases.

We have a creek running through the middle of town and have good drainage Have a lime business that is quite extensive, and lime is freely used as a disinfectant. The village is more or less constantly in the gas and smoke from the numerous kilns around the the town. The Board has been very earnest in its work of cleaning up during the last year.

CELINA—Pop., 3,500—Dr. L. P. Lisle, H. O.

4 Present sanitary condition good. Greatest defects insufficient sewerage.

5 Kept a careful watch in the transportation of strangers here, especially foreigners. Notified and seen that privy vaults were properly kept. Garbage speedily cleaned up, and weeds mowed and burned.

6 All of them.

7 Not 10 per cent. are cemented.

8 I have never known them to take any action in the matter.

9 There is no regulation as to the distance.

10 None to my knowledge.

11 Not to my knowledge.

13 All orders are complied with with little difficulty.

14 Diphtheria, 4 cases; scarlet fever, 3 cases; typhoid fever, 9 cases, 2 deaths; whooping cough, 2 cases.

CENTERBURGH—Pop., 700—Dr. Robt. C. M. Lewis, H. O.

4 Present condition fair. No system of sewerage. Many open wells, and unwillingness of owners of property to keep privies clean, etc.

5 General cleaning of premises, etc.

6 All use wells, (either drove or dug wells).
7 There are no cemented vaults.
8 No.
10 Yes.
11 No.
13 No.
14 Scarlet fever, 6 cases; typhoid fever, 12 cases, 1 death.

We closed all privy vaults as none were cemented, and try to make the owners use plenty of lime, etc., and clean the boxes every few days. We find it a difficult task to make the people comply.

CHICAGO JUNCTION—Pop., 1,770—Dr. D. H. Young, H. O.

4 Fair. The great defect is lack of drainage and the habit of throwing everything on the surface of the ground. We have a heavy clay soil to contend with full of alkali that destroys the cement of cisterns.

5 Only to clean up as much as possible. The health officer made a tour of the town, and had everything cleaned and burned, buried and disinfected as well as possible.

6 There are 7 drilled wells in the town about 70 feet deep. About 50 families use this water which is good. There are 3 wells of which the first 40 feet of each are walled and the rest drilled and cased, making a chance for impure water.

7 There is but one cemented vault in the town, the rest are set on the top of the ground or use a box. Our rule calls for a box.

8 No, because the water supply is from cisterns which the alkali destroys in a short time, if not looked after every year or two.

10 No wells, but a large number of cisterns that are in a bad condition in that respect.

11 No.
13 As a rule, yes.
14 Diphtheria, 2 cases; typhoid fever, 1 case.

There is a large sulphur spring just within the corporate limits of the town that supplies a great part of the water of the town. This is being contaminated by a slaughter house just outside of the town. The house is at the head of a ravine that drains down to the spring, and after a heavy rain cannot help but bring down all the wash from the house. The house is about 1,200 feet from the spring. Of course the removal of this is beyond my power.

CINCINNATI—Pop., 305,000—Dr. J. W. Prendergast, H. O.

4 Good. Amongst the defects may be mentioned the privy vault system. Under the recent act of the legislature compelling property owners to make sewer connection, these vaults are being gradually done away with. The water supply is defective. The city needs an isolation hospital, public disinfecting station and an abattoir.

5 As soon as the department received well-founded reports of the advent of cholera in New York city, steps were taken to thoroughly inspect all travel from the east. Quarantine stations were established at convenient points along the lines of eastern travel and inspecting crews made thorough examinations of all incoming passengers.

6 About 1 per cent.
7 About 25,000.
10 No.

11 No.

13 Yes.

14 Diphtheria, 1,308 cases, 313 deaths; scarlet fever, 1,155 cases, 57 deaths; typhoid fever, 234 cases, 122 deaths; measles, 697 cases, 8 deaths; whooping cough, 234 cases, 32 deaths.

CLARINGTON—Pop., 1,000—John E. Morrill, H. O.

4 Not good. Defects are general,

5 None; the Board of Health has had no existance for about two years; the town council claimed that $15 per year salary to the clerk of board and $20 per year salary to the Health Officer was a useless expense.

6 All use either springs or wells, about 90 per cent. use wells.

7 About 98 per cent.

8 No.

10 Yes.

11 No.

13 When there was a Board, yes.

14 Diphtheria, 50 cases (estimated); scarlet fever, 8 cases; typhoid fever, 20 cases; measles, 75 cases.

CLEVELAND—290,000—Dr. J. Strong, H. O.

4 Sanitary condition of city at present time on the whole is excellent, with the exception of diphtheria and scarlet fever prevailing in certain portions.

5 The strictest quarantine in the country was enforced from September 18th to October 4th, 1892, through a large and efficient police force, the city ordinances and state laws providing for sanitary protection were rigidly executed.

6 About 5 per cent. (estimated).

7 About 2 per cent. (estimated).

8 Yes.

9 Forty feet.

10 Yes.

11 Ninety-six wells condemned and filled during past year.

12 Water of suspected wells analyzed and when found contaminated, were condemned, ordered filled up and lake water substituted.

13 As a general rule, they have.

14 Diphtheria, 755 cases, 210 deaths; scarlet fever, 727 cases, 36 deaths; typhoid fever, 350 cases, 167 deaths; measles, 654 cases, 22 deaths; *whooping cough, 17 cases, 21 deaths.

CLEVES—Pop., 2,000—Dr. W. C. Hughes, H. O.

4 Not good. Open wells and privy vaults; defective drainage.

5 Ordered vaults cleaned and flooded with saturated solution of sulphur and bichloride of mercury; garbage hauled away; all out-buildings whitewashed and lime to be used plentifully.

6 80 per cent.

7 Between four and five hundred.

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*Number of cases of whooping cough failed to report, but deaths reported, hence above desparity.

8 Are trying to.
9 Fifty feet.
10 Yes.
11 No.
12 None.
13 Have had considerable opposition.
I have no record of cases of contagious diseases, but they were not prevalent.

CLIFTON—Pop., 1,600—Dr. Wm. Herbert Bell, H. O.

4 Good.
5 None.
6 Comparatively none.
7 Nearly all are uncemented.
8 No, it has not.
10 No.
11 No.
13 Yes.
14 Diphtheria, 17 cases, 5 deaths; scarlet fever, 10 cases; typhoid fever, 2 cases; measles, 18 cases, 2 deaths.

The greater part of the population of Clifton use Ohio river water supplied by the city of Cincinnati. Nearly all houses now have connection with the public sewer. All infectious diseases now are placarded.

COLLEGE HILL—Pop., 1,400—E. F. Smith, H. O.

4 Good. No special defects.
5 A general cleaning up.
6 Less than 5 per cent.
7 Not many.
8 No.
10 No.
11 No.
13 Yes.

COLLINWOOD—Pop., 2,500—Dr. A. L. Waltz, H. O.

4 Good. Our greatest need now is the proper disposition of garbage.
5 All garbage was removed and outhouses cleaned.
6 All use wells.
7 We have very few cemented vaults. Most all boxes.
8 No.
10 Haven't discovered any.
11 No.
13 Yes.
14 Diphtheria, 2 cases; scarlet fever, 9 cases; typhoid fever, 3 cases; measles, 1 case.

COLUMBUS—Pop., 100,000—W. A. McDonald, Secretary.

4 (1) Comparatively good. (2) Lack of disposition of garbage and night soil.

5 Rivers and streams were patroled, thus preventing pollution, thorough house inspection and stringent enforcement of rules of Board of Health.

6 75 per cent.

7 12 per cent.

8 Yes.

9 From well—twenty feet for vault.

10 No.

11 Yes.

12 Notification to owner to close well up.

13 Yes.

14 Diphtheria, 448 cases, 73 deaths; scarlet fever, 349 cases, 16 deaths; typhoid fever, 41 deaths; whooping cough, 5 deaths.

CONVOY—Pop., 700—Dr. R. L. Crooks, H. O.

4 Good.

5 Thorough cleaning and disinfecting of all cess-pools, privy vaults, and all garbage burned, all drains thoroughly limed.

6 All.

7 Not any.

8 Yes.

9 One hundred feet.

10 None.

11 Yes.

12 Health officer ordered it closed by order of council.

13 Yes.

There has been no contagious diseases in this town in the past year. Our Board of Health is rigid and the people obey without trouble.

CONNEAUT—Pop., 4,500—Dr. E. D. Merriam, H. O.

4 When the sewer is finished we think the sanitation will be good.

5 A location was selected for the establishment of a quarantine station near the state line. The R. R. trains and harbor were inspected night and day by order of the State Board.

6 One-half or more.

7 Very few, if any.

8 It has not been particularly laid down.

10 There are many we believe to be impure from like causes.

11 No.

12 We have what we consider the best system of water works in the state, water is drawn by driven wells in the sand at the lake shore, filtered through one hundred feet or more of lake sand, perfectly clear and as pure as lake water can be made.

13 Yes.

14 Diphtheria, 14 cases, 3 deaths; scarlet fever, 10 cases, 1 death; typhoid fever, 8 cases, 2 deaths; whooping cough, 2 cases.

COSHOCTON—Pop., 4,000—Isaac Hagans, H. O.

4 Want of sewerage. The town too poor to construct them.

5 Board of Health tackled this matter single-handed. Had a general cleaning up of public and private places. Placed in most of the houses such printed matter on the subject as was furnished by the State Board of Health.

6 No direct means of knowing—probably twenty-five per cent.

7 Of the whole number in the town about 400 are cemented.

8 Yes. Those within 50 feet of any well, water tight, those at a greater distance not so made.

10 Such wells have been put out of use.

11 Yes.

12 By direction of health officers.

13 Yes.

14 Diphtheria, 1 death ; scarlet fever, 3 deaths.

CRESTLINE—Pop., 3,300—Dr. Chas. E. Trimble, H. O.

4 The sanitary condition is good. The greater portion has a good system of sewerage, and in less than six months we are promised by council and county commissioners another sewer, which will abate our greatest nuisance.

5 There was very little done more than removing filth and requesting all nuisances to be reported, etc.

6 I would judge 75 per cent.

7 Nearly all.

8 No.

10 No.

11 Yes.

12 The water was first condemned, after which it was closed by request.

13 There has been no trouble.

14 Diphtheria, 4 cases, 2 deaths; typhoid fever, 21 cases, 7 deaths; measles, 5 cases; whooping cough, number of cases indefinite, has been epidemic, 3 deaths.

The cases of typhoid were nearly all in the country and all the deaths but one were in the country, averaging a distance from one to five miles.

CRIDERSVILLE—Pop., 600—Jas. P. Church, H. O.

4 In fair condition. Greatest defect is lack of sewerage.

5 Cleaning up lots and property of filth and garbage.

6 About all, a few using cistern water.

7 Nearly all.

8 They do not.

9 About fifty to seventy-five feet.

10 None that I know of.

11 No.

13 Yes.

14 Diphtheria, 2 cases; typhoid fever, 6 cases, 4 deaths; whooping cough, 2 cases.

The sewerage is not as good as it ought to be, but on account of outlet it is hard to sewer properly, there not being sufficient fall.

CUYAHOGA FALLS—Pop., 3,500—I. N. Reid, H. O.

4 The present sanitary conditions are good, the only thing that we lack is a place for the deposit of garbage which is sometimes thrown in the river. (The river is not used for supply.)

5 We caused all places to be cleaned, vaults, barnyards, backyards, cellars and every place where there was standing water to be filled or made dry.

6 We have the best water in the state from deep driven wells in solid rock.

7 Pretty much all uncemented. All new ones and some old ones I caused cemented this year.

8 Yes.

9 Fifty feet. Less than 50 feet must be brick, double cemented.

10 No.

11 No.

13 They have.

14 Scarlet fever, 14 cases, 2 deaths.

Cuyahoga Falls is considered a very healthy place. The Cuyahoga river which runs through the town has a fall of 250 feet to the mile with a very deep ravine and the town lies on both sides of the river, which has a slight rise on both sides.

CYGNET—Pop., 1,500—Dr. A. L. Mercer, H. O.

4 Drainage is what we want but is hard to get, as we are so flat.

5 Nothing as yet.

6 They all use drilled wells; it is from 5 to 15 feet to rock.

7 There is not one, but boxes are used.

8 No.

10 No, wells are drilled in rock and then iron pipes driven so as to shut off everything.

11 No.

13 Has given us some trouble, but we took them before mayor.

14 Scarlet fever, 1 case; measles, 10 cases; whooping cough, 20 cases.

DALTON—Pop., 900—John M. Fiscus, H. O.

4 The present sanitary condition is none of the best.

5 Nothing at all; board does not meet, and everything has its own way here.

6 About all; 100 per cent.

7 About 150.

8 Yes.

9 Fifty feet.

10 None that I know of.

11 No.

13 Yes, when our board met and we had a health officer.

14, Diphtheria, 3 cases; scarlet fever, 2 cases; whooping cough, 6 cases.

DAYTON—Pop., 63,000—Dr. A. H. Iddings, H. O.

4 (1) Sanitary condition fair. (2) Present privy vault system and method of disposing of vault matter and garbage.

5 A thorough house to house inspection has been made and the abatement of all nuisances that were found.

7 About 85. Largely drove wells. A special inspection of which has been made.

7 About 12,000.

8 No, excepting upon general conditions.

10 No.

11 Not from vault contamination.

12 A resolution of the board has always been sufficient.

13 Yes. Have not been required to use legal force for one year.

14 Diphtheria, 142 cases, 21 deaths; scarlet fever, 142 cases, 3 deaths; typhoid fever, not reported, 32 deaths; measles, 8 cases; whooping cough, not reported, 2 deaths.

The death rate will be much below that of 1891. Dayton is now in a better sanitary condition than for many years.

DEGRAFF—Pop., 1,300—Dr. W. H. Hinkle, H. O.

4 Good. Greatest defects are hog pens, privy vaults and dug wells. But a great many are driving wells to depth of 40 to 90 feet. Shall urge the council to pass ordinance prohibiting the keeping of hogs in corporation.

5 Thorough cleansing of streets, alleys and premises and disinfecting where necessary.

6 One hundred per cent.
7 About all uncemented.
8 Not as much attention given to this matter as should be.
10 None.
11 Yes.
12 Filling up old well and new well driven to second water (40 to 90 feet).
13 Yes.
14 Diphtheria, 1 death; scarlet fever, 2 deaths; typhoid fever, 3 deaths.

DELTA—Pop., 1,500—Dr. S. P. Bishop, H. O.

4 Very good; defective in controlling privies and pig pens.
5 General cleaning up.
6 One hundred.
7 Ninety-nine per cent.
8 Yes.
9 Fifty feet.
10 Yes.
11 No.
13 We have some difficulty in a few cases.
14 Scarlet fever, 12 cases; typhoid fever, 10 cases.

One physician refused to report. The others neglected to report any cases.

DESHLER—Pop., 1500—Dr. T. M. Gehrett, H. O.

4 The sanitary condition of Deshler at present is fair. Drainage was our greatest sanitary defect, but we have during the past year put in 4,000 feet of sewerage, which will give us fair drainage.

5 Tried to thoroughly clean and disinfect all suspicious places.
6 One hundred per cent.
7 Not many.
8 Yes.
9 Fifty feet.
10 None but that have been condemned.
11 Yes.
12 By order of Health Officer.
13 No.

14 Diphtheria, 5 cases, 1 death; scarlet fever, 5 cases; typhoid fever, 10 cases; whooping cough, 50 cases, 1 death.

DOYLESTOWN—Pop., 1,100—Dr. A. E. Stepfield, H. O.

4 Very ordinary, hog pens and privy vaults and what is worse a determined feeling on the part of the citizens to keep hogs.

5 None.

6 One hundred per cent.

7 One for nearly every family.

8 Yes, but a hard thing to enforce.

9 One hundred feet.

10 Yes.

11 No.

12 None.

13 Yes.

14 Diphtheria, 3 cases, 1 death; scarlet fever, 2 cases.

I think we shall be able when the time comes to have every thing cleaned up, although it is much like pulling teeth until the scare is really on.

DUNKIRK—Pop., 1,500—Dr. C. C. McLaughlin, H. O.

4 Good.

5 Notified all property owners to abate all nuisances about premises.

6 All.

7 Don't know.

8 No.

10 No.

11 No.

13 Yes.

DUPONT—Pop., 500—Isaac Staley, H. O.

4 Shallow wells in sand are the greatest sanitary defects. Most of the wells are from 8 to 10 feet deep in top crust of sand.

5 None.

6 The whole town.

7 There are none cemented.

8 They have commenced looking after that.

9 Fifty feet.

10 We can't tell yet, we are watching to ascertain.

11 No.

13 Yes.

14 Diptheria, 4 cases, 1 death.

The health of our town has been very good. The Board of Health has made a special effort to have disinfectants put in about all of the privy vaults and have done some cleaning up.

EAST LIVERPOOL—Pop., 12,500—William Gibbs, H. O.

4 Is good. Lack of sewerage. There is not half of the city sewered at the present time.

5 Cleaned up all streets and alleys and all public and private property, and put the city in as good a sanitary condition as our facilities would allow.

6 Not 3 per cent.

7 There is not more than 90 per cent. outside of those attached to the sewer.

8 Yes.

9 Five hundred feet.

10 None.

11 Not for 10 or 12 years.

13 As a general rule they have.

14 Diphtheria, 4 cases, 1 death; scarlet fever, 40 cases, 3 deaths; typhoid fever not reported, 10 deaths.

EAST PALESTINE—Pop., 2,100—E. H. Smith, H. O.

4 Fair. A creek running through the village where all refuse is emptied into, all carcasses from kittens to hogs, also a few private sewers empty into it; in dry weather the creek dries up and only pools of waste water remain and stagnate; proper sewerage would remedy it.

5 The board endeavored to put the village in proper sanitary condition and with cholera scare succeeded fairly well. The citizens became alarmed when the village became a quarantine station and put their properties in good sanitary condition generally.

6 About 50 per cent.

7 About eighty-five.

8 They do not.

10 Yes.

11 Yes, attempted it.

12 By condemning the well as a nuisance, notifying the owner to fill up well which he refused to do, notified tenants not to use the water and move out of place as soon as convenient, which tenants did after having three cases of diphtheria and one death in the family. Water is not used and house has been vacant ever since, and the landlord has no love for the Board.

13 No.

14 Diphtheria, 14 cases, 3 deaths; scarlet fever, 2 cases; typhoid fever, 4 cases. 1 death.

ELMORE—Pop., 1,400—Dr. R. A. Willett, H. O.

4 Good as we could desire. Would like to get rid of hog-pens in corporation, but cannot as a majority of the Board raised hogs for their own use.

5 The board ordered general cleaning of streets and alleys.

6 All persons use wells for drinking water.

7 Two hundred.

8 Yes.

9 Privy-vaults must be 50 feet from wells if not cemented.

10 Not that we know of.

11 No.

13 Yes.

14 Diphtheria, 1 case, 1 death; scarlet fever, 9 cases, 2 deaths; typhoid fever, 4 cases; whooping cough, 8 cases, 1 death.

ELMWOOD PLACE—Pop., 2,000—Fred. C. Broerman, H. O.

4 Very bad, caused by the grading and making of streets and sewers. At present thirteen streets are torn up, but will all be finished before spring. Bad drainage has been the cause of much sickness.

5 None as yet, but I shall bring the matter up at the next meeting of the board.

6 Nearly one-half of our population use well water.

7 About five-sixths of total number of vaults.

8 Yes.

9 Not less than 50 feet.

10 Yes, a few.

11 It has not.

13 We had to resort to the law in two cases.

14 Diphtheria, 42 cases, 17 deaths; scarlet fever, 23 cases, 1 death; typhoid fever, 3 cases; measles, 7 cases.

ELYRIA—Pop., 6,000—Dr. W. F. McLean, H. O.

4 Better than ever before. Has always been a very healthy and comparatively cleanly town. 2d. Sewers empty into shallow river bed and spread over rock bottom to contaminate the atmosphere, also the uncemented privy vault system, a public dumping ground for all sorts of garbage near business center of city.

5 Nothing further than resolution published in city papers appointing special day for cleaning premises and enforcing health regulations for frequent cleaning of privies; asking city council to provide a new dumping ground and provide for disposal of garbage and rubbish.

6 Probably 99 per cent.; a very few families use cistern water.

7 One thousand or more.

8 Yes, of those hereafter to be made.

9 Forty feet.

10 No, but it is only a question of time when the soil will become saturated with fecal matter.

11 No, except to recommend suspension of use for a time in two or three cases.

12 Nothing further than advice of physicians and health officers.

13 Yes, except one case of fine and imprisonment. One physician refuses to report contagious diseases. None report deaths, except of contagious diseases.

14 No record has been kept by Health Officer, but all cases have been promptly reported to Secretary of State Board of Health and published in Sanitary Record.

We will not be clothed with the powers of a city corporation until after the next spring election, and are, at present, handicapped in enforcing some regulations necessary. We have been trying to educate our people in the necessity of sanitary measures without unnecessary friction and think we are succeeding fairly well and expect to be ready for cholera when it comes.

FAIRPORT—Pop., 1,200—D. A. Lewis. H. O.

4 1st. Good. 2d. The defects consist of lack of proper sewers and overcrowding of tenement houses.

5 Had the town thoroughly cleaned.

6 Five per cent.

7 One hundred.

8 Yes.

9 Fifty feet.

10 No.

11 No.

13 Yes.

14 Diphtheria, 2 cases, 1 death; scarlet fever, 5 cases; typhoid fever, 12 cases, 1 death; measles, 4 cases; whooping cough, 1 case.

The water used by this village is obtained from the lake, from the same source as that of Painesville. It is impossible to get a good well of water here on account of the clay sub-soil which accounts for the small percentage who use well water. One portion of our town is badly in need of sewers, but the proper authorities are sparing no efforts to procure them.

FELICITY—Pop., 1,000—C. E. Houghton, H. O.

4 Good. There is no great sanitary defects, we think the town in good sanitary condition.

5 To put the town in No. 1 sanitary condition and forbid the use of water from any unclean well or cistern.

6 Ninety per cent.

7 There are no cemented privy vaults in town.

8 Yes.

9 Not less than 50 feet.

10 One.

11 No.

13 Yes, with but little difficulty.

14 Diphtheria, 7 cases.

This board, when diphtheria was so bad in Chilo, Franklin township, urged the trustees and informed them of their duty until the cases were properly quarantined and reported 23 cases to the State Board of Health before they (the trustees) took the matter in hand.

FINDLAY—Pop., 20,000—Benj. A. Banker, H. O.

4 Present sanitary condition fair; lack of sewerage and good drinking water.

5 Cleaning up the city.

6 90 per cent.

7 99 per cent. uncemented.

8 Yes.

9 Fifty feet.

10 Yes, lots of them.

11 Yes.

12 Pulled up the pump and nailed up the well.

13 In the main, yes.

14 Diphtheria, 24 cases, 8 deaths; scarlet fever, 27 cases, 2 deaths; typhoid fever, 30 cases, 2 deaths; measles, 4 cases; whooping cough, 20 cases.

We have put 10 miles of sewers in our city this year. In putting in these sewers we have drained 1,500 surface wells. Our surface wells are only ten to fourteen feet deep and our sewers are sixteen to eighteen feet below the surface.

FLUSHING—Pop., 1,000—Dr. J. V. Webster, H. O.

4 Not good.

5 Nothing.

6 90 per cent.

7 All.

8 No.

10 Yes.

11 No.

14 Typhoid fever, 3 cases.

FOREST Pop., 1,500—Dr. W. N. Mundy, H. O.

4 Good; pig pens and privy vaults.

5 None.

6 Entire.

7 Nearly all uncemented. A few use dry earth closets.

8 No.

10 Yes.

11 No.

13 With but little difficulty.

14 Diphtheria, 3 cases, 1 death; scarlet fever, 4 cases; measles, 1 case.

FOSTORIA—Pop., 10,000—J. O. Hess, H. O.

4 Good.

5 Commenced at once to prepare for same and no means or labor spared to clean and properly disinfect the entire city.

6 Four-fifths.

7 Two-thirds.

8 Yes, fifty feet.

10 None.

11 No.

13 Yes.

14 Diphtheria, 5 cases, 2 deaths; typhoid fever, 6 cases, 2 deaths; measles, 7 cases; whooping cough, 2 cases, 1 death.

Our board is zealously guarding the interests of the city and pride themselves on its sanitary condition as an inland town.

FRANKLIN—Pop., 3,000—Dr. D. A. Williams, H. O.

4 Our town is in fair sanitary condition with exception of a large number of privies which we are going to have cleaned during the cold weather.

5 We made a house to house inspection and have the work so classified that we can get at it this winter and have things in good shape for next summer.

6 About thirty-three and one-third.

7 There is not a dozen cemented vaults in town.

8 We have ordinances which have never been enforced as some are as close as fifteen feet.

9 Our ordinances allow sixty-five feet.

10 Not to my absolute knowledge.

11 No.

12 We have a lot of wells which ought to be abandoned, but we have not learned just how to get at it.

13. Most of them.

14 Diphtheria, 39 cases, 6 deaths; scarlet fever, 12 cases, 2 deaths; typhoid fever, 6 cases, 1 death.

We do not placard houses where measles and typhoid fever are. We have never required physicians to report them.

GALION—Pop., 7,500—C. F. Eise, H. O.

4 Quite good. Chief objection is an open ditch running through the middle of the city, into which considerable filth is emptied. A dumping place for garbage is badly needed.

5 The board took pains to insist upon a general cleaning up and in a number of instances property owners were compelled to have their vaults cleaned and disinfected.

6 Probably ninety-five.
7 At least five hundred.
8 Yes.
9 Fifty feet.
10 There are some within the distance allowed.
11 Not since I have been Health Officer,
13 Not in every instance.

The board did a good summer's work and our city has been remarkably free from contagious diseases.

GALLIPOLIS—Pop., 5,000—Dr. E. Westlake, H. O.

4 Good at present. Hog pens and privy vaults.

5 A thorough inspection by the Health Officer and city council and police and a general cleaning up and removal of garbage by the people was the order which was readily obeyed.

6 We have wells only for manufactories, none expressly for drinking purposes.

7 All our privy vaults uncemented.
8 No.
10 Yes.
11 No.
12 None.
13 Yes.

14 Diphtheria, 12 cases, 4 deaths; scarlet fever, 4 cases, 1 death; typhoid fever, not reported, 5 deaths; whooping cough, not reported, 1 death.

GAMBIER—Pop., 600—Dr. E. J. Hyatt, H. O.

4 Condition, good.
5 None.
6 25 per cent.
7 200.
8 No.
10 None that I know of.
11 No.
13 Yes.

Health has been good as far as contagious disease are concerned.

GARRETTSVILLE—Pop., 1,100—Dr. C. A. Snow, H. O.

4 Fair. Better sewerage.
5 None.
6 90 per cent.

7 Unknown.
8 Yes.
9 Fifty feet or tight box.
10 Not known.
11 No.
13 Usually.
14 Scarlet fever, no report, one death.

GENOA—Pop., about 850—Dr. J. L. Trutton, H. O.

4 Sanitary condition at present, good; principal defects are surface cess-pools, but they are cared for as well as possible under existing circumstances.

5 A general cleaning up of alleys, streets and private property, putting everything in as good sanitary order as possible.

6 All water supplies are from wells.
7 No cemented vaults.
8 No.
10 It is possible there are some.
11 No.
13 Yes.

Cannot give deaths up to October 31, 1892, as our board was inefficient up to September, 1892. There has been no diphtheria or scarlet fever in the past year, in fact no infectious disease.

GERMANTOWN—Pop., 1,700—William Schaeffer, H. O.

4 The sanitary condition is excellent. Its greatest sanitary defects are uncemented privy vaults and cess pools.

5 The measures taken by our board, for the prevention of cholera, were to have a general inspection of premises by the Health Officer and order all privy vaults and cess-pools disinfected, cellars cleaned and disinfected with lime, and all rubbish cleaned up and removed from the limits of town.

6 All use wells.
7 All uncemented.
8 It does.
9 Thirty feet.
10 There are none.
11 They have not.
13 They have.
14 Scarlet fever, 3 cases; typhoid fever, 1 case; measles, 1 case; whooping cough, 20 cases.

The Board has decided to have three or four general cleanings of the town in a year, and remove all rubbish outside the town limits, and all privy vaults that become filled and filthy to be cleaned and a cemented vault put in.

GLENDALE—Pop., 1,500—Dr. T. J. Biggs, H. O.

4 With the exception of a stagnant pond, the sanitary condition of Glendale is excellent.

5 A thorough sanitary inspection of the village, including pig pens, vaults, cess-pools, drains, cellars and dumps.

6 About thirty per cent.

7 Five.

8 Yes.

9 Sixty feet.

10 No.

11 No.

13 In most cases, yes.

14 Diphtheria, 6 cases, 1 death; scarlet fever, 39 cases, 1 death; typhoid fever, 3 cases, 1 death; measles, 6 cases; whooping cough, 1 case.

A thorough sanitary inspection, as previously stated, has already been made. Commencing March 1st, 1893, inspections of this kind will be made every few weeks.

GLENVILLE—Pop., 2,000—Chas. B. Cook, H. O.

4 The present sanitary condition is good. Cess-pools and privy vaults.

5 The Board had the village canvassed and every place found in a filthy condition was ordered cleaned. Circulars telling what to do to prevent cholera were distributed through the village, and all trains were quarantined at the village limits.

6 Ninety-nine per cent.

7 Very few vaults are cemented; most cess-pools are.

8 The board has no rule to regulate the distance, but have had several removed as they were only a few feet apart.

10 Not one that we have a reason to suspect.

11 Yes, one.

12 Had same filled up.

13 Not at all times.

14 Diphtheria, 2 cases, 1 death; scarlet fever, 5 cases; typhoid fever, 2 cases; measles, 7 cases.

GRAFTON—Pop., 1,000—Jno. Isley, H. O.

4 Present sanitary condition good. Greatest sanitary defect, lack of proper drainage.

5 The Board of Health had the town thoroughly cleaned, all sources of filth removed and the town otherwise put in first-class sanitary condition.

6 Every one in the corporation.

7 No cemented privy vaults.

8 No.

10 No.

11 No.

13 Yes.

14 Diphtheria, 1 case, 1 death; scarlet fever, 6 cases; typhoid fever, 6 cases; measles, 10 cases; whooping cough, 5 cases.

The board has been very successful the past year in keeping the town in a reasonably healthy condition.

GREENFIELD—Pop., 3,000—Albert M. Mackerley, Mayor.

4 Our village is in fair sanitary condition. The greatest defect is possibly lack of sufficient sewerage.

5 None. The general health of our village being good we did not consider it necessary to do more than merely look after the general sanitary conditions as usual, each year.

6 All. While we have a system of water works,the water is not used for domestic purposes.

7 Over half, about 300.

8 No order on this subject.

10 I think possibly there are.

11 No.

GREENVILLE—Pop., 6,000—Dr. A. F. Markwith, H. O.

4 In good condition in all respects, except wells, most of them are contaminated more or less by filtering from privy vaults.

5 We had every house, public building and premises, every cellar and well inspected. All privy vaults in bad condition were cleaned, and had all others disinfected by using copperas. The number cleaned was 601.

6 Ninety-nine per cent.

7 There is not more than one per cent cemented.

8 Yes. The distance is 50 feet.

9 Fifty feet if not cemented, and any distance if cemented.

10 I think the great majority of them are polluted.

11 No, but have stopped the using of water out of them.

12 When we found a well had very bad water in it (most of them have) we condemned it and ordered it cleaned. In most cases had no trouble. Had most trouble with a member of the Board who had some wells in a bad condition.

13 Yes, except in regard to wells, and the trouble came from a member.

GIRARD—Pop., 3,000—Dr. A. J. Brooks, H. O.

4 The sanitary condition is very good, will compare favorably with any of the surrounding towns. The greatest defect is the uncemented privy vaults.

5 The cleaning up of drains, cess-pools, privy vaults and alleys.

6 Nearly all.

7 The greater per cent. of the privies are cemented.

8 Yes.

9 Fifty feet.

10 Very few.

11 Yes.

12 They were notified by the Board of Health to not use the water, and the water was analyzed by a chemist.

13 Yes.

14 Scarlet fever, 20 cases, 1 death; typhoid fever, 5 cases; measles, 1 case.

HAMLER—Pop., 600—Jacob Spangler, H. O.

4 Fair. Rotten saw dust.

5 All privies were moved and new vaults dug and a general clean-up.

6 All of them.

7 We have none cemented.

8 No.

10 The wells are all bored except two or three.

11 No.

13 Yes.

14 Typhoid fever, 1 case, 1 death.

HANGING ROCK—Pop., 500—Joseph Kinkaid, H. O.

4 Conditions good.
5 Not any.
6 90 per cent.
7 40 per cent.
8 No.
10 No.
11 No.
13 Yes.
14 Diphtheria, 3 cases; scarlet fever, 1 case; typhoid fever, 4 cases, 1 death.

HARRISBURG—Pop., 230—Dr. C. A. Copeland, Clerk.

4 Good.
5 None.
6 All.
7 There are no cemented privy vaults.
8 No.
10 No.
11 No.
13 Yes.

HICKSVILLE—Pop. 2,700—Board of Health.

4 Fairly good. Greatest sanitary defect is lack of drainage, owing to flatness of land and lack of sewerage.

5 Cleaned up garbage and looked after noisome substances.

6 About 80 per cent. 20 per cent. use water from water-works pumped from fountain wells.

7 But few. Perhaps a dozen.

8 Yes. Fifty feet.

9 50 feet.

10 No.

11 No.

13 Some difficulty but they were enforced.

14 Typhoid fever, 2 cases.

All physicians report no cases of contagious diseases or such as are attributable to bad water at this place; when our public water fails water-works is used.

HILLIARDS—Pop., 460—Dr. N. P. Davidson, H. O.

4 The present sanitary condition is fairly good. The greatest sanitary defects are poor drainage and the condition of privies and their proximity to wells.

5 We held frequent meetings and ordered the sanitary police to see that all nuisances were abated and that privies were renovated and disinfected and that all decaying organic matter be removed and disinfected. These points were pretty thoroughly executed.

6 All use well water so far as I know.

7 None of the privy vaults are cemented to my knowledge.

8 Yes, we try to do so but it has not been accomplished in all cases.

9 50 feet.

10 None at present because privy vaults are emptied and disinfected.

11 No.

13 Usually with very little difficulty.

HILLSBORO—Pop., 5,000—Dr. H. M. Brown, H. O.

4 Reasonably fair. No sewerage.

5 All places of apparent filth were cleaned up such as privy vaults, hog pens and low places where surface sewerage had accumulated.

6 Probably seventy-five.

7 More than half.

8 No.

10 Not now under observation. It is quite probable.

11 Yes.

12 Health officers inspected, and simply requested it to be closed. Frequently a notice is given in writing served by the sanitary policeman.

13 Yes.

14 Scarlet fever, 2 cases; typhoid fever, 40 or 50 cases, 4 or 5 deaths; whooping cough, 100 or 150 cases.

HOLGATE—Pop., 1,500—Dr. Jno. Miller, H. O.

4 Sanitary condition is good at present.

5 After organizing, had a general cleaning up all through town.

6 All.

7 Between five and six hundred.

8 No regulation.

9 None.

10 No.

11 No.

13 At first the action was slow, but no force was needed.

Our wells are all bored wells but a few recently put down, are tubular, and no surface water will enter that well, but of the bored wells there are none that give pure water.

HUBBARD—Pop., about 2,500—Joseph Stevens, H. O.

4 Present sanitary condition, fair. Have not great defects. Location high. Generally healthy.

5 None except to clean up all rubbish and decayed vegetation, together with privy vaults and cess-pools.

6 All.

7 We have but one or two cemented vaults. Most are using drawers.

8 It does.

9 Fifty feet.

10 We know of none.

11 Have not.

13 So far they have.

14 Diphtheria, 3 cases, 2 deaths.

Board was organized September 22. Are getting into very good working order. Citizens comply with all demands willingly.

HUDSON—Pop., 1,900—Dr. L. D. Osborn, H. O.

4 Sanitary condition, good. Lack of water to carry off filth.

5 Keeping as clean as possible.

6 75 per cent.

7 We do not allow any vaults.

10 Yes.

11 Yes, three; by special order.

12 To close; they were closed.

13 Yes.

14 Diphtheria, 7 cases; scarlet fever, 8 cases; measles, 1 case; whooping cough, 3 cases.

There has been some improvement in sewerage the past year.

HUNTSVILLE—Pop., 450—Dr. F. A. Richardson, H. O.

4 Probably as good as can be without sewerage and water works. Town is located on a gravel hill, well drained with tile, etc.

5 Board made a house to house inspection ordered cleaning, disinfection, draining, ventilating cellars, etc.

6 One-hundred per cent.

7 Four. We require dry conservancy.

8 It does.

9 Sixty feet.

10 No.

11 It has not. Our wells are all "driven wells."

13 With little difficulty.

Our greatest difficulty is, our jurisdiction does not extend beyond our corporation lines.

IRONTON—Pop., 15,000—Dr. N. K. Moxley, Jr., H. O.

4 Our city is in a fairly good sanitary condition, but we are in need of a system of sewerage and the abatement of the hog-pen nuisance. There are some other causes of complaint which, however, we hope soon to get rid of.

5 Our board insisted on a general cleaning up, abatement of various local nuisances, recommended the boiling of water before using it as drinking water, as our supply is from the Ohio river. A great deal of necessary sanitary work was done this year. Board also had the president and Health Officer go to Huntington, W. Va., and Ashland, Ky., and confer with the boards there and asked them to assist in establishing quarantine against immigrants coming from the east.

6 Perhaps 10 or 15 per cent. Not more.

7 It is impossible to say, as all or almost all vaults are uncemented.

8 No.

10 No. Public wells are very few here as our water supply is from hydrants of water works.

11 No.

13 Yes, generally.

14 Diphtheria, 9 cases, 3 deaths; scarlet fever, 62 cases, 8 deaths.

Cases of typhoid fever not reported to Board of Health.

KALIDA—Pop., 600—Samuel Melvin, H. O.

4 Fair. Filthy streets and alleys.
5 None.
6 About 80 per cent.
7 All.
8 Yes.
9 One hundred feet.
10 None.
11 No.
13 Yes.
14 Diphtheria, 12 cases, 8 deaths; typhoid fever, 4 cases.

KENT—Pop., 3,700—John F. Clark, H. O.

4 The town is admirably drained by the Cuyahoga river, and consequently the sanitary condition of the town is as good as it can be with surface drainage only.

5 A careful canvass of the town by special officers, a general cleaning up and the erection of a pest house if needed.

6 Fifty per cent.
7 This is our greatest danger; nearly all are uncemented.
8 It does not.
10 There are, but not in use.
11 No.
12 Would like to see the process to close such wells, explained in annual report.
13 Yes.
14 Diphtheria, 1 case, 1 death.

KINGSTON—Pop., 1,000—Dr. Charles B. James, H. O.

4 The greatest sanitary defect of our town is our wells. While our town is situated on the highest point between Columbus and Portsmouth, we have a subsoil which collects all surface drainage and in many cases pours it into our wells.

5 Cleanliness.
6 Ninety-nine per cent.
7 About half of privy vaults are cemented.
8 Yes.
9 Not nearer than 60 feet.
10 Th re were three (3) which the board ordered closed up.
11 Yes.

12 Simply asked property owners to close up, which they did without any trouble.

13 Yes.

14 Diphtheria, 13 cases, 2 deaths; typhoid fever, 11 cases, 2 deaths; measles, 68 cases, 1 death; whooping cough, 7 cases.

LANCASTER—Pop., 8,000—Dr. J. W. Lewis, H. O.

4 In good condition with the exceptions noted in my letter.
5 Thorough cleansing.
6 Three-fourths or more.

7 Fourteen hundred.
8 No.
10 Yes.
11 No.
12 None.
13 No.
14 Diphtheria, 73 cases, 4 deaths; scarlet fever, 38 cases, 1 death; measles, 15 cases.

LARUE—Pop., 1,100—M. V. Toner, H. O.

4 The village of LaRue lies on the bank of Scioto and would make a better cornfield than a town, and water has often stood 3 feet deep over a great part of the village, and our drainage is poor on account of high water backing. Proper drainage and shallow wells.

5 Our Board was organized in September and the cholera season was about over.

6 We have no other source.
7 I do not think we have cemented privy vaults in the village.
8 Yes.
9 Fifty feet.
10 I believe not.
11 No.
13 Easily, we intend from this on to live clean.

Our Board is composed of citizens that are enterprising and will stand by the Health Officer, and it will be my fault if we have not a clean town.

LATTY—Pop., 500—Dr. J. H. Horford, H. O.

4 Very poor; bad streets, privies and drainage.
5 None.
6 All.
7 None cemented.
8 No.
10 Yes.
11 No.
13 Very little attention is paid to the Board.

I, myself, may be a member of the Board but there has been so little interest taken that I quit attending their meetings and told the mayor to appoint some one in my place. Whether he did it I don't know. I will say the sanitary condition of the town is bad.

LEBANON—Pop., 3,150—Dr. F. H. Frost, H. O.

4 Very good, the greatest defects being wells and privy vaults.

5 The mayor issued a proclamation calling on all persons to clean their premises in accordance with the recommendations of the State Board, and the Board made a personal inspection.

6 Fully 99 per cent.
7 Nearly all.
8 Yes.
9 Seventy-five feet.

10 I know of none, but have no doubt there are some.

11 None.

13 No, not always.

14 Scarlet fever, 1 death typhoid fever, 3 deaths; whooping cough, 1 death.

The clerk has not kept a record of the number of cases reported, and the doctors have been remiss in reporting the same.

LEESBURG—Pop., 800—Dr. H. A. Beeson, H. O.

4 Fairly good, much improved in late years in the matter of drainage, improvement of streets, etc. The greatest present source of trouble and anxiety is the location of privies on top of the ground, so that in case of freshets or overflow the contents of vaults are floated out and distributed over the village.

5 None specially to that end.

6 One hundred, that is, everybody uses well water.

7 Just as many as exist. Nothing of this kind of improvement has come to my knowledge.

8 No.

10 Three.

11 No.

13 No, but resort to legal compulsion has not been required.

14 Diphtheria, 6 cases, 1 death; typhoid fever, 4 cases, 1 death; whooping cough, 10 cases.

We had a great deal of controversy as to the cleanliness of a slaughter house but no real trouble with the proprietor. The complainants demanded unconditional removal which the Board declined to enforce on account of the place being kept in a satisfactory sanitary state. The question still remains.

LEIPSIC—Pop., 1,500—Dr. Jno. C. McClung, H. O.

4 Sanitary condition not good; defects, accumulation of garbage, decomposing filth on streets, in alleys and on lots; chief impediment to its removal is indifference of citizens and home council.

5 Had the town inspected by sanitary police and on his report had parties notified to remove and correct all discoverable unsanitary conditions.

6 100 per cent. Many tubular wells are used.

7 Three hundred and fifty.

8 No.

10 Yes.

11 No.

13 People obey the orders or not as they please.

14 Diphtheria, 1 case, 1 death; measles, 1 case.

The enforcement of sanitary rules where so much indifference exists is like making water run up hill.

The prospect of an epidemic attended with great fatality has no terrors seemingly for the people.

LIBERTY CENTRE—Pop., 700—G. N. Jennings, H. O.

4 Good.

5 None, did not consider it necessary.

6 Nearly all.

7 Don't know.
8 No.
10 Very few if any.
11 No.
13 Yes.
14 Typhoid fever, 6 cases, 1 death.

LINWOOD—Pop., 1,700—W. S. Reynolds, H. O.

4 The present sanitary condition is good; the greatest defect is the garbage and pig pen regulation.

5 The Board adopted a new code of laws regulating the above and other defects which are in the hands of the printer.

6 About one per cent.
7 There are no cemented vaults or cess-pools; we have gravel sub-soil.
8 Yes.
9 Twenty feet for cisterns and forty feet for wells and cess-pools.
10 No.
11 No.
13 With but little.
14 Diphtheria, 6 cases, 1 death; typhoid fever, 5 cases, 1 death.

LOGAN—Pop., 3,300—Dr. I. C. Wright, H. O.

4 It is in about as good a sanitary condition as it can well be put considering our uncemented privy-vaults and numerous hog pens as filth breeders.

5 Nothing, except to put the town in as clean a condition as possible under existing circumstances.

6 95 per cent. or over.
7 Seven or eight hundred.
8 Yes.
9 50 feet.
10 It is possible there are some.
11 No.
13 Yes, very generally, some have however given trouble.
14 Diphtheria, 7 cases, 1 death; scarlet fever, 83 cases, 5 deaths; typhoid fever, 2 cases; whooping cough, epidemic, 3 deaths.

Two arrests were made during the year—one for non-burial of dead animal, convicted and fined; the other for not taking out a permit to keep hogs in the corporation in accordance with the rules adopted by the Board. The case was tried before the mayor, J. P. Rochester, who discharged the defendent on the grounds that hog pens in the corporation are nuisances and the Board has no right to grant permits to keep nuisances.

LORAIN—Pop., 6,000—Dr. S. S. Cox, H. O.

4 The sanitary condition is much improved by the expenditure of about $60,000 on sewers during the past year; greatest sanitary defects are "hole in ground" privies and a large marsh in the center of town.

5 Every house in the corporation was visited and inspected and a garbage wagon established.

6 None, all use either lake water or cisterns.

7 One thousand.

8 No.

11 We have had several filled on account of not being used and containing stinking water.

12 The health officer notified the owners and they complied with the notice at once.

13 Yes as a general thing.

14 We have kept no record other than until cases have recovered or died.

LOWELLVILLE—Pop., 765—W. S. Baker, H. O.

4 The sanitary condition of our town is good; the greatest defects being privy-vaults as there are none cemented in our town; the Board has taken no steps to pass any ordinance to that effect.

5 There has been no extra measures taken to prepare for cholera.

6 I might say 99 per cent of our population use wells; one or two families use springs.

7 There are no cemented privy-vaults.

8 They do.

9 50 feet is the distance allowed.

10 Not to my knowledge.

11 They have not.

13 They have.

14 Scarlet fever, 2 cases, 1 death.

LYNCHBURG—Pop., 800—Andrew Bishir, H. O.

4 The present sanitary condition of town is good.

5 Thorough cleaning up and disinfecting.

6 Entire population.

7 Two hundred.

8 No.

10 No.

11 No.

13 Yes.

MACKSBURG—Pop., 600—R. C. Smithson, H. O.

4 Sanitary condition good. Cannot name any defects now.

5 None in particular.

6 100 per cent.

7 All of them—none cemented.

8 No.

10 I think not.

11 No.

13 No.

Have had no deaths in year except one, and that was from abcess of stomach.

MADISON—Pop., 800—Dr. A. H. Stockham, H. O.

4 Sanitary condition excellent. Could hardly name a defect existing mutually. In some instances individual premises are not kept as well as possible.

5 None.
6 100 per cent.
7 Fifty uncemented privy vaults.
8 No.
10 None to my knowledge.
11 No.
13 Yes.
14 Diphtheria, 5 or 6 cases; scarlet fever, 6 or 8 cases; typhoid fever 1 case; measles, perhaps 20 cases; whooping cough, perhaps 10 cases.

MADISONVILLE—Pop., 3,000—Dr. E. A Flinn, H. O.

4 Sanitary condition is good. Havn't a suitable place for dumping garbage; etc. Will have by early spring.
5 Ordered a general cleaning up.
6 Probably 5 per cent.
7 I cannot say. I think there are very few cemented.
8 Yes.
9 Fifty feet.
10 None that I know of—have very few wells.
11 No.
13 Have had some trouble, enforced them in every case.
14 Diphtheria, 15 cases, 4 deaths; scarlet fever, 5 cases; measles, 4 cases.

MALTA—Pop., 900—Norman McAskill, H. O.

4 Good. No system of sewage.
5 Thorough inspection by the board of all suspected localities and cleaning up same.
6 100 per cent.
7 Almost all of them are uncemented.
8 No.
10 No.
11 No.
13 Yes.

MANCHESTER—Pop., 2,000—Dr. J. W. Guthrie, H. O.

4 Bad. Open privy vaults, unclean streets.
5 Appointed a Health Officer. Ordered to clean up but paid no attention to notice.
6 One-half.
7 They are all uncemented.
8 No.
10 No.
11 No.
13 Never been enforced.

MANSFIELD—Pop., 16,605—Dr. R. Harvey Reed, H. O.

4 Fairly good. Old privies and garbage.
5 Ordered the abandonment of all privies and the erection of dry closets only. General cleaning of streets and alleys. Eradication of all itinerant "quacks."

Closing of all polluted wells. Ousting of all hog pens. Looking after the milk supply. Inspection of meats.

6 Approximately about 20 per cent.

7 If you had asked me how many cemented privy vaults there were I would have said not to exceed a dozen.

8 Yes.

9 Not less than 50 feet.

10 Yes.

11 Yes.

12 Ordered it filled up, and if not done by the owner, it was done by the city and charged up to the taxes.

13 Not entirely, but usually.

14 Diphtheria, 99 cases, 25 deaths; scarlet fever, 39 cases, 1 death; typhoid fever, 16 cases, 1 death; measles, 1 case.

MARIETTA—Pop., 9,000—Dr. C. W. Eddy, H. O.

4 The sanitary condition is good. We need a system of sewerage but will probably have it soon.

5 The city was thoroughly cleaned. The weeds and rubbish of streets and alleys was removed and burned.

6 I presume 50 per cent.

8 Nearly all are not cemented.

8 Not allowed nearer than 50 feet.

9 Fifty feet.

10 None at present.

11 No.

13 Yes. We have but little trouble now.

14 Typhoid fever, 1 death.

MARION—Pop., 10,000—E. H. Raffensperger, Secretary.

4 Fair. Nothing extra. Proper drainage, but is being remedied by the city system of sewerage now being constructed.

5 A general cleaning up and inspection of every house in the city by members of Board of Health.

6 I judge fully 75 per cent.

7 Several hundred.

8 Tries to.

9 100 feet.

10 Can't say.

13 In most cases.

14 Diphtheria, 17 deaths; scarlet fever, 11 deaths; typhoid fever, 8 deaths.

MARYSVILLE—Pop., 3,000—Sam Bonnett, H. O.

4 Sanitary condition good. Greatest defects are, water supply and want of system of sewerage.

5 General cleaning up and house to house visitation by Board and Health Officers.

6 Sixty-six and two-thirds per cent.

7 Seventy-five per cent.

8 No.
10 None especially.
11 No.
13 Yes.
14 Diphtheria, 3 cases; scarlet fever, 9 cases; typhoid fever, 7 cases, 3 deaths; measles, 4 cases.

Our town is a country village and naturally healthy and wholesome. The worst defects are people using wells too near privy vaults. This though is only theory as we have no direct cases from this. There is also a lack of sewerage.

MASON—Pop., 700—G. C. Dorn, Clerk.

4 Sanitary condition good.
5 General sanitation. Scraping of streets.
6 Eighty per cent.
7 About 90 per cent. uncemented.
8 No.
10 No.
11 No.
13 Yes.

We have a *live* Board of Health and they pride themselves upon the sanitary condition of Mason, Ohio.

MASSILLON— Pop., 11,000—Dr. T. Clarke Miller, H. O.

4 The condition is good. Our greatest sanitary shortcoming is lack of intelligent supervision of the sewers.

5 A house to house inspection (the second during the summer) in September, and a thorough and general cleaning up of the alleys.

6 Perhaps 60 per cent.
7 Only a few are cemented.
8 It tries to.
9 As great as possible the board discourages the use of well water.
10 I know of none at present.
11 Yes.
12 Ordered it closed. Then had the sanitary inspector pull out the pump. The pump stayed out.
13 We have had no serious trouble.
14 Diphtheria, 13 cases, 1 death; scarlet fever, 27 cases; typhoid fever, 15 cases, 4 deaths; measles, 6 cases; whooping cough, 1 case; membranous croup, 3 cases, 3 deaths.

McARTHUR—Pop., 1,000—James W. Darby, H. O.

4 Fairly good. It needs a few good sewers and drains.
5 A general cleaning up of filth.
6 90 per cent. (estimated).
7 Nearly all uncemented.
8 No.
10 No. Though there may be some.
11 No.
13 We have considerable difficulty.
14 Typhoid [illegible]ver, 6 cases; whooping cough, cases.

McCOMB—Pop., 1,300 to 1,500—Dr. Jno. A. Thompson, H. O.

4 Present condition is not satisfactory. Greatest defects are: Privy vaults, vitiated and often insufficient water supply and inadequate methods for disposal of filth and garbage.

5 Board held a meeting, first one in months. Spasmodic attempt was made to dispose of the accumulated filth of years. Council grew suddenly economical—work was suspended.

6 95 per cent. Remainder use cisterns.
7 Couldn't guess the number. There are but four cemented vaults.
8 Yes.
9 50 feet.
10 Yes.
11 No.
13 Have had no serious difficulty.

McCONNELSVILLE—Pop., 2,000—J. D. Maris, H. O.

4 Fairly good. Lack of sewers.

5 The Board ordered personal inspection of all premises, which is being done.

6 All. Our citizens are supplied from public wells, which are located on corners of street crossings.

7 500.
8 Yes.
9 50 feet.
10 None.
11 No.
13 Yes.

MECHANICSTOWN—Pop., 200—Dr. John M. Watt, H. O.

4 Present condition moderately good. The chief defects are neglected privies and stables near dwellings and wells.

5 We have no Board of Health. I personally advised our people to clean up, to use disinfectants in privies and drains.

6 All.
7 Open privies set on top of ground.
10 Yes.
11 No.
14 Whooping cough, 4 cases.

MELROSE—Pop., 600—R. E. Kingery, H. O.

4 Good.
5 None.
6 None. They all use cistern water.
7 None.
8 Yes.
9 75 feet.
10 No.
11 No.
13 Yes.
14 Typhoid fever, 5 cases; whooping cough, 12 cases, 1 death.

MENTOR—Pop., 800—J. W. Lowe, H. O.

4 Good.

5 The circulars issued by the State Board of Health were arranged and put up in public places that the general public might read and learn what steps to take toward the prevention of cholera. The Health Officer did his duty as directed by the State Board.

6 About 95 per cent.

7 Nearly all.

8 No.

10 Yes, but no positive proof.

11 No, but we closed a hydrant at the Lake Shore depot which supplied impure spring water.

12 Communicated with the Lake Shore R. R. authorities requesting that it be closed and pure water supplied. Request was complied with by sinking a well forthwith.

13 Yes.

14 Typhoid fever, 3 cases.

We had considerable trouble with deposits of butchers offal upon a certain lot, but finally succeeded in having the owner dispose of it according to law. We had one case of suspected typhoid fever attended by a Painesville physician who, after being called in question, reported it typhoid malaria. The patient died, however, and the nurse is now sick and is being attended by another Painesville physician, who has failed thus far to make any report.

MIAMISBURG—Pop., 3,500—W. S. Bookwalter, H. O.

4 Good; most trouble with vaults.

5 We had the town thoroughly cleaned and everything put into good sanitary condition, also a close lookout for any new immigrants that might come.

6 Well water is universally used.

7 There are none of them cemented except one.

8 Yes.

9 75 feet.

10 Perhaps one.

11 No.

13 Yes, with but few exceptions.

14 None of these diseases.

MILFORD—Pop., 1,150—F. C. Curry, H. O.

4 Present condition, moderately good; greatest defect is an old mill-race running through the town. Efforts are being made to have it filled and drainage changed.

5 Cleaning all kinds of decaying matter from streets and private yards, causing defective vaults to be closed and new ones built, guarding against impure drinking water as much as possible.

6 About 35 per cent.

7 About one-half of vaults are not cemented; no cess-poools.

8 Have not done so in the past, but will from present time on.

10 There are three that in former years were closed, are now used with no apparent bad effect.

11 No. Had to compel some parties to do so, and we were openly defied by some few we had ordered the second time.

14 I don't think there were any deaths from these diseases—former Board left no record of any.

Feel the present condition is better than same months previous, and with the help of council hope to have our orders carried out.

MILLERSBURG—Pop., 2,000—Dr. J. E. Whitmar, H. O.

4 Sanitary condition, good. Filthy alleys and yards.

5 Have made a general cleaning up and disinfected suspicious places.

6 Seventy-five per cent.

7 Nearly all.

8 Yes. Fifty feet.

9 Fifty feet.

10 Several under suspicion.

11 No.

13 Generally so.

14 Diphtheria, nine cases, one death; scarlet fever, six cases; typhoid fever, three cases.

Several cases of diphtheria and membranous croup that were not reported to Health Officer, also typhoid fever.

MINERAL RIDGE—Pop., 1,200—Dr. A. M. Beach, H. O.

4 Present condition is good; can't say as there are any grave defects.

5 The town was put in as clean a condition as possible; a circular was left in each house containing similar recommendations to those given in State Board of Health circulars.

6 Perhaps five per cent; the most of it is obtained from cisterns.

7 Nearly all are of this kind.

8 Not necessary, as but few wells in town, on account of being undermined by coal banks.

10 No.

11 No.

13 Yes.

14 Scarlet fever, three cases.

MINERVA—Pop., about 1,200—Thomas J. Roach, H. O.

4 The present sanitary condition of the village, I think, is as good as any village of its size in the state.

5 Our Board ordered that all persons be notified by the local newspapers to put themselves in a sanitary condition at once, and to that end I served notices on about fifty persons to clean-up and disinfect in accordance to law.

6 About ten per cent., and a less per cent. during winter.

7. There are very few cemented privy vaults or cess-pools in town.

8. It does.

9 Not less than twenty-five feet for all old vaults and fifty feet for all new vaults.

10 None that I know of.

11 We have stopped the use of one well for drinking purposes.

12 By placing a notice near by, stating that there was a privy vault within the legal distance; would have disbandoned it altogether, but did not on account of it being used at a livery stable.

13 They have been cheerfully complied with.
14 Typhoid fever, 8 cases, 2 deaths.

MONTPELIER—Pop., 1,600—Dr. J. A. Weitz, H. O.

4 The sanitary conditions are fairly good. The most important defects are poor drainage, filthy alleys and back yards, shallow open wells in part of the town, open filthy privy vaults.

5 None.
6 One hundred per cent.
7 Five hundred.
8 No.
9 Any distance.
10 Yes.
11 No.
13 The Board has taken no active measures.

14 No report made by families or physicians. Scarlet fever, estimated, 20 cases, *2 deaths.

* The two deaths were in the country and not reported. The number of cases of scarlet fever are merely estimated, as no reports were made to the Board of Health. No steps were taken to prevent the spread of contagious or infectious diseases except the prohibition of suspected cases from attending the public schools. Disinfection is seldom and imperfectly practiced.

MORROW—Pop., 840—Dr. Jno. W. Shockey, H. O.

4 The present sanitary condition of our town is good. Our sanitary defect is our uncemented and inferior cess-pool and privy vaults.

5 General cleaning-up of gutters, alleys, garbage, etc.
6 Ninety per cent.
7 Ninety per cent. are uncemented.
8 No.
10 A few the Health Board have ordered repaired.
11 One or two.

12 Personal inspection by sanitary police, and ordered to be closed until the proper repairs were made.

13 Yes.
14 Diphtheria, 6 cases, 3 deaths.

MT. BLANCHARD—Pop., 550—Dr. J. Odenbaugh, H. O.

4 We feel proud of our sanitary condition. Have no great sanitary defects.
5 A general cleaning up and thorough disinfecting of all vaults, etc.
6 Entire population.
7 No cess-pools.
10 Not one.
11 No.
13 The people respond readily to all orders.

We have no Board of Health. I have been looking after the sanitary condition of the town.

MT. GILEAD—Pop., 2,000—A. E. Young, H. O.

4 Uncemented privy vaults.

5 A general cleaning up was had under supervision of Health Officer in September with a request to citizens to burn up everything during fall and winter.

6 About nine-tenths.

7 Eight or nine.

8 No.

10 No.

11 No.

13 With one exception.

14 Diphtheria, 1 case, 1 death; typhoid fever, 1 case.

MT. ORAB—Pop., 600—J. A. Cumberland, H. O.

4 Sanitary condition good. Defects, privies and open wells.

5 A little cleaning up. The trouble is to get our people to do what we order them to do.

6 Ninety per cent.

7 None cemented.

8 No, not as yet.

10 Yes, several.

11 No.

13 No.

14 Diphtheria, 11 cases, 1 death.

MT. PLEASANT—Pop., 1,000—Dr. J. A. McGlenn, H. O.

4 The present sanitary condition is good. The greatest defects are stable refuse, privy vaults, and hog-pens.

5 None.

6 All.

7 Two hundred and twenty-five.

8 No.

9 No regulation.

10 Yes; there are several.

11 Yes.

12 It was ordered closed by Health Officer and parties closed it without further trouble.

13 Not all.

14 Typhoid fever, 3 cases.

The butcher shambles were removed; but not without some difficulty.

MT. STERLING—Pop., 1,000—Dr. E. F. Collins, H. O.

4 Not good. Two slaughter houses in the town. No system of drainage.

5 Inspection and cleaning streets once each week.

6 Ninety per cent.

7 Not more than one or two.

8 Yes.

9 Fifty feet.

10 Two; one has been condemned.

11 One.
12 Condemned by Board as unfit for use.
13 No.
14 Diphtheria, 2 cases; scarlet fever, 1 case.

MURRAY CITY—Pop., 1,000—F. H. Brehm, H. O.

4 Poor, very poor.
5 None.
6 One hundred per cent.
7 All are uncemented.
8 No.
10 Yes.
11 No.
13 The Board has issued but one order and no attention was paid to it.
14 Typhoid fever, 1 case.

The Board of Health is composed of city council who met and appointed themselves, and they have appointed me to serve as Health Officer for the period of one year. They have passed no rules or regulations granting me power or authority to act in any case, and seem indifferent to the future welfare of the village. The Board has accomplished nothing, and the village would be as well off without any Board.

NAPOLEON—Pop., 3,000—L. V. Betson, H. O.

4 Good; privy vaults.
5 A general clean up; more than was ever done before in one year.
6 Sixty-six.
7 One hundred and fifty.
8 No.
10 Yes.
11 No.
13 Yes, generally.
14 Diphtheria, 8 cases, 2 deaths; scarlet fever, 4 cases.

Have only had Board of Health office three months and therefore report above is for that time.

NAVARRE—Pop., 1,100—A. W. Goshorn, H. O.

4 The present sanitary condition of this village is good, fully as good as we have reason to hope for or expect.

5 During the months of July, August and September last the Board of Health has made great effort in various ways to renovate the village from all filthy and unhealthy matter of whatever nature found to exist, and have used disinfectants wherever found proper.

6 I may say a hundred per cent. of them. I know of but two exceptions.
7 There are but a few that are cemented.
8 Yes.
9 Fifty feet.
10 I do not believe there is any well being polluted by drainage of any kind.
11 Not that I know of.
13 Yes.
14 None of these diseases.

NELSONVILLE—Pop., 6,000—Dr. Chas. W. Cable, H. O.

4 Fair. Lack of sewerage. Canal passing through center of town filled with stagnant water and weeds. Foul privy vaults.

5 None.

6 All.

7 Impossible to tell, probably forty-nine out of every fifty.

8 No.

10 Yes.

11 No.

13 This year yes.

14 Diphtheria, 3 cases, 1 death; scarlet fever, 44 cases; typhoid fever, 4 cases; measles, 1 case.

NEVADA—Pop., 1,000—Dr. G. F. Cole, H. O.

4 Sanitary condition fair. Greatest sanitary defects are presence of pig-pens and vaults, uncemented, over entire town, slaughtering done in center of town, waste and garbage allowed to accumulate from one spring to the next.

5 None.

6 95 per cent.

7 Nine-tenths of whole number.

8 No.

10 Yes.

11 No.

NEWARK—Pop., 15,000—Dr. Willard Curtis Rank, H. O.

4 Comparatively good. The defects are mainly the uncemented privy vaults and the rather general use of wells for drinking water.

5 The employment of two sanitary policemen, and a house to house inspection was made. We also had six horses and carts with their drivers at work to thoroughly clean up alleys, etc. There was a general cleaning up and cleaning out of old privy vaults.

6 About 85 per cent. The water-works supply 475 families.

7 I would judge at least 2,000, though most of these are tightly boarded and puddled.

8 The Board of Health has not established any definite distance.

10 One well, which I ordered to be abandoned.

11 I shall take measures to close the above well.

13 During the past four months they were easily enforced.

14 Diphtheria, 5 deaths; scarlet fever, 2 deaths; typhoid fever, 3 deaths; whooping cough, 1 death.

The members of our Board of Health are representative business men. They have given me all of the support possible. I was not appointed until the first of August, but we have done a great deal of work since that time.

Reports of infectious diseases have not been made to the Health Officer until since September 1st, although each physician placarded the houses in which such diseases were and took all necessary measures to prevent extension. I get the deaths from death record book.

NEW BREMEN—Pop., 1,500—Dr. M. S. Ekermeyer, H. O.

4 Sanitary condition good except the stagnant pond in the southwest portion of town. Our Board has taken action to have it removed.

5 A general cleaning up of all streets, alleys, vaults and lots. All weeds and other filth ordered burned and vaults disinfected.

6 99 per cent.

7 A great many.

8 Yes.

9 Not less than fifty feet.

10 I do not know of any.

11 None.

13 Most generally.

14 None of these diseases.

NEW CARLISLE—Pop., 1,000—Dr. Ben Davis, H. O.

4 Fair. Danger of water pollution from unsanitary privy vaults.

5 Have ordered disinfection.

6 All.

7 One for each family.

8 Yes.

9 One hundred feet.

10 Yes.

11 No.

12 None.

13 No.

14 Diphtheria, 2 cases, 1 death; scarlet fever, 2 cases; typhoid fever, 2 cases; measles, 1 case, 1 death.

Physicians make no report to health officers.

NEW LEXINGTON—Pop., 2,000—Dr. J. H. Wright, H. O.

4 Fair. Privy vaults and pig sties.

5 We were on the alert.

6 All or nearly all.

7 None cemented.

8 No.

10 None at present.

11 Yes.

12 The health officer ordered it and the orders were obeyed.

13 Yes.

14 Typhoid fever, 10 cases, 4 deaths; whooping cough, 30 cases.

NEW LISBON—Pop., 2,500—R. G. Eells, H. O.

4 Our town is in good shape.

5 We had our streets and alleys cleaned up, our sewers flushed out and the dead ends of our water pipes cleaned out.

6 Almost all.

7 There are but a few cemented. New ones have to be eight feet deep and planked up.

8 Yes. They are not allowed within 50 feet of a well.

10 No.

11 One.

13 Most of the time the butchers have not cleaned up as they should; it has been hard to get some of our board up to the point of ordering the slaughter houses moved further away.

14 Diphtheria, 1 case; scarlet fever, 31 cases, 1 death; typhoid fever, 7 cases; whooping cough, 3 cases.

The slaughter houses are on a stream of water (a small stream) and on the borough line. I think they will be moved this next summer.

NEW LONDON—Pop., 1,200—Wm. B. Newkirk, H. O.

4 The sanitary condition is fair, but greatest defect lies in the present system of drainage.

5 None.
6 Ninety-nine per cent.
7 None.
8 Yes.
9 Fifty feet.
10 None, so far as known.
11 No.
13 No.

14 Diphtheria, 51 cases, 13 deaths; typhoid fever, 1 case, 1 death. These cases were from Jan. 1, '92, to Jan. 1, '93.

Our Board of Health has had a hard road to travel, but since reorganization, by Dr. Probst, we have been respected and our orders obeyed.

NEW MADISON—Pop., 435—Dr. E. A. Hecker, H. O.

4 Good. The greatest sanitary defect is the uncemented privy vaults.

5 At a called meeting the Board of Health decided to give a general notice "to clean up," as every property would be inspected on a certain date with a view of determining its sanitary condition. On the fixed day the board of health canvassed the town and noted all places in an unsanitary condition. Those found lacking were then given ten days' time to make the necessary change in their surroundings. The notice specified what was to be done, etc. Only a few had to be notified a second time.

6 One hundred per cent., so far as I know.
7 I don't know of any cemented. Hence about 100 would be a rough guess.
8 In all new work. The old vaults and wells have not yet been acted upon.
9 Fifty feet.
10 No.
11 No.
13 Yes.
14 None.

NEW MATAMORAS—Pop., 700—Dr. W. L. West, H. O.

4 The present condition fair. The greatest defect being privy vaults and hog pens.

5 By general cleaning up and the use of disinfectants.
6 All.
7 All.
8 No.
10 No.

11 No.
12 None.
13 Yes.
14 Typhoid fever, 5 cases.

NEW STRAITSVILLE—Pop., 3,000—Caleb Powell, H. O.

4 Not in good condition.
5 No extra precautions.
6 All use wells and cisterns.
7 None cemented.
8 Yes.
9 50 feet.
10 Do not know of any.
11 No.
13 No particular difficulty.
14 Diphtheria, 1 case, 1 death; scarlet fever, 25 cases, 4 deaths.

NEW RICHMOND—Pop., 3,000—Dr. T. J. Mullen, H. O.

4 We think our present sanitary condition good. Our sewerage not as good as it ought to be.
5 Abating nuisances and keeping the village in good sanitary condition.
6 Very few. But two wells in the village that I know of.
7 All. I do not know of a single one cemented.
8 The Board has taken no action in that matter.
10 None.
11 None.
12 None.
13 They have within the last year.
14 Diphtheria, 25 cases, 5 deaths; scarlet fever, 1 case; measles, 6 cases.

NEW WASHINGTON—Pop., 800—J. F. Kimerline, H. O.

4 Very fair. Hog pens and privies.
5 A general cleaning up has been ordered by the Board of Health.
6 Ninety per cent.
7 One hundred.
8 Have a law to that effect.
9 Fifty feet.
10 None.
11 None.
13 Yes.
14 Diphtheria, 3 cases; scarlet fever, 14 cases, 2 deaths; typhoid fever, 3 cases; whooping cough, 12 cases.

The marshes on either side of us give us some throat trouble beyond a doubt.

NORTH AMHERST—Pop., 1,800—Dr. N. H. Cornwell, H. O.

4 The sanitary condition is good at the present. Bad privy vaults are its greatest sanitary defects.
5 We had the town cleaned up generally.

6 Nearly all.

7 There are no cess pools; cannot say as to privies.

8 No.

10 The well at the public school. The water tastes like surface water.

11 Yes, we closed this well.

12 We notified the school board to close the well.

13 Yes.

14 Diphtheria, 1 case, 1 death; scarlet fever, 12 cases, 1 death; typhoid fever, 7 cases; measles, 14 cases.

NORWALK—Pop., 8,000—M. Suydam, H. O.

4 The present sanitary condition of this city is good. No sanitary defects at present.

5 The Board of Health authorized the Health Officer to remove all garbage and filth, which was done.

6 Seventy-five per cent.

7 Fifty per cent

8 Yes.

9 Twenty-five feet.

10 Yes.

11 No.

13 Yes.

14 Diphtheria, 2 cases, 1 death; scarlet fever, 6 cases; typhoid fever, 5 cases, 4 deaths.

We have no contagious diseases in the city; at present but one case of typhoid fever.

NORWOOD—Pop., 4,500—Dr. Chas. W. Tidball, H. O.

4 Reasonably good. Greatest defects are want of sewers and collection of garbage. Also dangerous cistern water. It is difficult to make a tight cistern, the majority leak, and consequently are contaminated.

5 A general request to clean up and burn garbage, and distribution of circulars "On prevention of Cholera."

6 Very small, unless leaky cisterns fed by surface water are considered as wells.

7 Six hundred.

8 Yes.

9 Fifty feet.

10 None.

11 No. Have few wells in town.

13 Have some difficulty.

14 Diphtheria, 3 cases, 1 death: scarlet fever, 20 cases, 1 death; typhoid fever, 1 death; measles, 35 cases, 1 death; whooping cough, 1 death.

It is as difficult to make a water tight vault as a cistern. In wet seasons the water comes in so fast that cement is forced off, and even after the cement has hardened, the great pressure of water breaks the cement off. No doubt, the quality of cement has something to do with the failures, but it is impossible to regulate the kind of cement to be specified in the building contracts. The place is growing rapidly; we will have water-works within one year, sewers will follow, and then our vaults will be drained into the sewers. In wet seasons our vaults fill to the top with surface water; this gradually disappears during dry weather. When you consider the above, the healthfulness and low death rate of this community is remarkable.

OAK HARBOR—Pop., 2,200—Dr. J. M. Stewart, H. O.

4 Have good sewerage.
5 Cleanliness and disinfection of all privy vaults, backyards, etc.
6 We have but two wells in town for drinking purposes.
7 We have boxes or cemented vaults.
8 Yes.
9 No less than 50 feet.
10 No.
11 No.
13 Mostly, some trouble in getting physicians to report cases.
14 Diphtheria, 3 cases, 2 deaths; scarlet fever, 30 cases, 8 deaths; typhoid fever, 16 cases, 4 deaths.

OAK HILL—Pop., 700—Dr. D. B. Warren, H. O.

4 There is not and never has been a Board of Health in our village. There was a board appointed about four years ago but it never met to organize. Another was appointed two years ago and it met the same fate. Hence it would seem to us that if we need anything in the way of sanitation, it is an active board of health.

OAKWOOD—Pop., 400—J. H. Stover, H. O.

4 Good.
5 None.
6 All.
7 Nearly all.
8 Yes.
9 50 feet.
10 No.
11 No.
14 None.
Most all our wells are drilled wells into the rock.

OBERLIN—Pop., 4,627—E. L. Burge, H. O.

4 Need of sewers now under construction.
5 General measures to prevent accumulations of filth.
6 Public water 40 per cent., wells 30 per cent., cisterns 30 per cent.
7 Twenty.
8 No.
10 Yes.
11 No.
13 Yes.
14 Diphtheria, 16 cases; scarlet fever, 10 cases, 3 deaths; typhoid fever, 8 cases; whooping cough, 50 cases, 2 deaths. Number of cases merely estimated.

OHIO CITY—Pop., 800—E. E. Smith, H. O.

4 Fair. The greatest sanitary defect is bad water.
5 None.
6 About two-thirds.

7 About nine-tenths.
8 All new ones.
9 Seventy feet.
13 Yes.
14 Typhoid fever, 7 cases, 1 death.

OLMSTEAD—Pop., 1,500—H. B. Northrop, H. O.

4 (1) Good. (2) Want of thorough drainage.
5 None.
6 99 per cent.
7 All.
8 No.
10 No.
11 No.
13 No.
14 Scarlet fever, 6 cases, 2 deaths; typhoid fever, 2 cases, 1 death; whooping cough, 2 cases.

ORRVILLE—Pop., 2,000—Dr. H. Blankenhorn, H. O.

4 Sanitary condition fair: privy vaults, pig pens, sewerage system, disposal of garbage.
5 Cleaning up in a general way.
6 Entire population.
7 Three fourths of them.
8 No.
10 None that I know of.
11 No.
13 Not much trouble.
14 Diphtheria, 4 cases, 2 deaths; scarlet fever, 6 cases, typhoid fever, 2 cases.

PAINESVILLE—Pop., 5,000—H. P. Sanford, H. O.

4 Good. There are some sections of the town where the water is so near the surface that no cellers can be constructed nor proper drainage be secured. It is expected that part of these will be sewered next year.

5 A thorough house to house visitation was made by inspectors appointed for that purpose; and our citizens advised as to what it was necessary to do to put their premises in a proper sanitary condition. Two hundred and eighteen nuisances were ordered abated; all of which orders were on a second visitation found to have been complied with excepting thirty-one, which it is proposed to enforce.

6 Three-quarters.
7 1,100. Our privies are mostly on the surface.
8 This is regulated by ordinances.
9 Fifty feet.
10 Very few.
11 No.
13 Mostly.
14 Diphtheria, 1 case, 1 death: typhoid fever, 2 cases, 2 deaths.

PAINT—Pop., 200—Henry W. Hope, Postmaster.

4 Good. No sanitary defects.

5 None taken. No Board of Health.

6 50 per cent.

7 None.

8 No.

10 No. Most of the wells are drilled to a depth of thirty-five or forty feet through this limestone.

11 No.

14 Typhoid fever, 5 cases, 1 death.

PATASKALA—Pop., 800—Dr. James Lisle, H. O.

4 Sanitary condition good. Privy vaults were in a poor condition by never cleaning them. Most of that trouble has been relieved. I have ordered all of them cleaned.

5 The board has ordered all garbage removed from yards and streets which I find our citizens do willingly.

6 About 40 per cent. Drove wells and pipes are used.

7 I don't think we have more than one-half dozen cemented.

8 No.

9 But few wells within 60 feet of privies.

10 None.

11 No.

13 Yes.

14 Scarlet fever, 3 cases.

One more case of scarlet fever since my last report.

PAYNE—Pop., 1,500—Dallas P. Dildine, Clerk.

4 Very good.

5 A general cleaning up, and using disinfectants.

6 100 per cent.

7 All privy vaults are uncemented.

8 As yet nothing has been done in this line.

10 No.

11 No.

12 No.

13 We have had no difficulty thus far.

14 Scarlet fever, 3 cases.

The Board of Health have at all times been ready to act promptly in case of emergency.

PAULDING—Pop., 2,500—Dr. P. A. Dix, H. O.

4 Bad. Dirty and filthy alleys from throwing garbage, manure from stables and other filth into same, over run privy vaults, stagnant water from being thrown from houses into gutters, and bad drainage in part of town.

5 None whatever.

6 All use it.

7 About all are uncemented.

8 No.
10 I cannot say.
11 No.
13 The Board have given no orders whatever.
14 Diphtheria, 7 cases, 2 deaths.

The Board was appointed last spring, I believe, and no work done, except probably in a few private instances, reporting to mayor of privy nuisances. Our Board of Health should be either abolished as a nuisance or go to work at once.

PENINSULA—Pop., 600—Dr. W. N. Boerstler, H. O.

4 Only fair, except a stagnation of water in an abandoned river-bed which has been declared a nuisance and ordered to be abated.
5 None—have lately been sworn in.
6 100 per cent. as far as I know.
7 Very many, I think.
8 Yes.
9 Fifty feet.
10 I do not know of any.
11 Never had occasion to.
14 Measles, 14 cases.

PERRYSBURG—Pop., 2,000—Dr. J. H. Rheinfrank, H. O.

4 Sanitary condition good. Defects, privies.
5 A sanitary policeman was appointed, and the town was generally cleaned up
6 All.
7 All uncemented.
8 Yes.
9 One hundred feet.
10 No.
11 No.
13 Yes.
14 Typhoid fever, 1 case.

PIONEER—Pop., 700—William H. Durbin, H. O.

4 Fair. Failure of the people to comply with the authority of the Board.
5 None.
6 100 per cent.
7 Two hundred and fifty privies or cess pools.
8 They do not.
10 None.
11 No.
13 They have.
14 Diptheria, 4 cases; typhoid fever, 2 cases.

PIQUA—Pop., 10,000—Dr. F. E. Kitzmiller, H. O.

4 Fairly good; want of sewers.
5 We put on two extra sanitary police and made house to house inspection.
6 Ninety at least.

7 Several thousand.
8 Yes.
9 Fifty feet.
10 Some few, but will all be connected by spring.
11 Generally have vaults removed.
12 Just tell them by written notice they must do it by such a date; they always respond.
13 Yes.

PLEASANT HILL—Pop., 700—Dr. S. M. Bausman, H. O.

4 The condition of the streets is good, the alleys, cellars and privy vaults demand the attention of the board: Privy vaults being in a very bad condition.

5 Hand bills were printed and given to the sanitary police, who inspected every house and premises, leaving a notice at each house. (Notice. You are hereby notified to clean up your cellar, back yard and premises, also to clean out all privy vaults and privies, and disinfect the same at once with air slacked lime, dry earth, or ashes: and such other sanitary measure that will be for the general good, within 20 days from this date, or same will be done and taxed against property. See sections 14, 15 and 17). Rule only partially carried out.

6 About 100 per cent.
7 About 75 per cent uncemented.
8 We have tried to do so.
9 One hundred feet.
10 Not at the present time (to my knowledge).
11 Yes, two.
12 Only by a stern demand and a threat to have it done by the sanitary police-
13 Yes, as far as we have gone.
14 Typhoid fever, 9 cases.

We pride ourselves upon our drinking water, only four (4) feet to limestone; then wells are drilled and two joints of sewer pipe cemented, renders us free from contamination.

PLEASANT RIDGE—Pop., 600—Dr. J. J. Marvin, H. O.

4 There is nothing but natural drainage; no sewers. The town is fairly clean Privy vaults are from 3 to 8 feet deep where there are any, often nearly full of water because our clay soil holds water like a bucket.

5 Nothing to speak of; there seems very little disposition to do anything.
6 Cannot say, but most of them.
7 There may be one or two cemented vaults, but I doubt it.
8 They have passed a resolution to do so.
9 Fifty feet.
10 None that I know of.
11 No.
13 Yes.
14 None.

There is great indifference. Some inquiry as to a dump for refuse has been made; the town is very healthy and this will account for lack of interest. The Board has been recently organized. We will grow into a better state of affairs gradually, unless some epidemic should ensue; in that case more vigorous measures would be employed. A copy of our printed regulations is on file in your office. "A stream cannot rise higher than its source;" the people are the source of power and it sometimes requires the presence of a real danger to awaken them.

PORT CLINTON—Pop., 2,500—Thos. J. Marshall, H. O.

4 Sanitary condition very bad; a great many privy vaults full and running over, contaminated wells, and the mayor and council; they are our greatest sanitary defects.

5 None at all; our board commenced to clean up the town. We notified owners of privy vaults, etc., to fix them, they refused, we employed men to do it and the council and mayor refused to allow our bills, and the consequence was that men would not work.

6 Twenty per cent.

7 Five hundred.

8 No, we can't regulate anything,

10 Yes, lots of them.

11 No.

13 No.

14 Diphtheria, 1 case, 1 death; scarlet fever, 32 cases, 3 deaths; typhoid fever, 2 cases, 1 death.

The Board of Health commenced to clean up the town. Indignation meetings were held by our best citizens, a mob proceeded to the rooms of the Board of Health and the board were compelled to use revolvers to defend themselves from an outraged people who refused to be cleansed. The council are forenenst us.

PROCTORVILLE—Pop., 650—Amos Ripley, H. O.

4 The condition of our town is good; the greatest sanitary defects and in fact about all we have had to contend with are hog pens and privies.

5 Myself and the members of the board visited each and every house and examined them from cellar to garret and ordered such changes and cleanings as we thought best.

6 There are but two wells in town.

7 About ninety-five.

8 They do not.

10 No.

11 No.

13 With the exception of two cases.

14 Diphtheria, 2 cases; whooping cough, 11 cases, 2 deaths.

I have lost my list but think there have been about 18 or 20 cases reported (whooping cough.)

PROSPECT—Pop., 1,000—Dr. C. M. C. Thomas, H. O.

4 I think we have as nearly a perfect sanitary condition as is possible in a village.

5 We had all the streets and alleys cleaned and privy vaults disinfected.

6 All.

7 100 privy vaults, no cess-pools.

8 No.

10 None. The wells are all drilled in the rock and it would be impossible for any surface water to get into them.

11 None.

13 Usually.

14 Scarlet fever, 1 case; typhoid fever, 1 case.

I had seven cases of diphtheria reported from the township, but none in the corporation. We, as a Board, compel all to put their premises in as perfect a sanitary condition as possible, by making a tour of the town about three times a year.

RAVENNA—Pop., 4,000—Joseph Gledhill, H. O.

4. The sanitary condition is very good considering that we have open sewers, but we have an ordinance prohibiting dish and wash water being thrown in the drains.

5 We had the drains and the town cleaned of all offal and filth. The ditches were all cleaned.

6 About twenty-five per cent.

7 We have about 25 cemented cess-pools and privies. The rest are on top of the ground. About 800.

8 No.

11 No.

13 Yes.

14 Diphtheria, 26 cases, 7 deaths; scarlet fever, 13 cases; typhoid fever, 5 cases; measles, 9 cases; whooping cough, 31 cases.

We quarantine all cases of diphtheria, adults as well as the children, and not allow them on the street, but we find trouble in the township—the trustees are not thorough enough.

RAWSON—Pop., 500—William Wing, H. O.

4 The sanitary conditions are poor. Improper drainage, surface privies, surface wells and filth allowed to accumulate in back alleys.

5 None.

6 95 per cent.

7 About 85 per cent.

8 There is an ordinance to that effect.

9 Fifty feet.

10 I cannot say positively until further investigation.

13 But little attention is paid to them.

14 No, I cannot answer correctly, but typhoid and malaria have been here.

READING—Pop., 3,300 F. X. Ankenbauer, H. O.

4 Fair. Creeks.

5 General house inspection and general cleaning of the village.

6 One-third.

7 We have fifty cemented privy vaults; cess-pools none.

8 No.

10 One, and it is not used.

13 No.

14 Diphtheria, 9 cases, 1 death; typhoid fever, 1 case, 1 death.

RICHWOOD—Pop., 1,600—H. C. Hamilton, H. O.

4 The sanitary condition is bad. The soil is gravely loam. The privy vaults are not cemented. A part of the town is drained by tile, with pikes acting as levees.

5 A new Board of Health was appointed and made a house to house visitation to see to the sanitary condition of each house, but the result was that filth was only changed from one place to another.

6 All. We have driven wells; they are believed to be safe.

7 Two hundred and fifty to three hundred, none cemented; 100 cess-pools.

8 It does not.

10 We have reason to believe there is.

11 We have condemned one. It has been put in again.

13 They have not been enforced.

14 Diphtheria, 1 case; scarlet fever, 20 cases, 1 death; typhoid fever, 15 cases, 2 deaths.

Our town is underlayed with gravel. The soil is about three feet deep over the gravel. We have plenty of cess-pools (sinks they are usually called), and privy vaults that are dug into the gravel. When the vaults are filled, or the cess-pools become too filthy, our people simply make a new one and cover the old one with the dirt from the new one. It will be seen that by this course we retain all the filth in the soil. But about thirty feet down we find a layer of clay, and we drive our wells through this clay into the second bed of gravel, and it is then claimed that the water is pure.

The drainage is not as it should be on the east side of the town. A large part of the town drains east in a depression running north and south. Pikes cross this depression going east. There are no culverts in these pikes. This causes the land and lots in this depression to overflow, and the water remains on the lots and dooryards until it is carried off by tile. This leaves the filth on the soil and makes sickness. The schoolhouse is on this depression. Two years since we had fifty-five cases of typhoid fever in this depression. Hog pens are common, slaughter houses poultry packing houses are allowed. They are at times a stench to the town.

ROCK CREEK—Pop., 800—Dr. W. S. Weiss, H. O.

4. The sanitary condition of the town is good and there are no special sanitary defects.

5 None.

6 All of them.

7 No cess-pools and no cemented privy vaults.

8 No.

10 No.

11 Think not.

13 Yes.

I have only recently been appointed Health Officer. So far as I know only 1 case of diphtheria, 3 of typhoid fever, no scarlet fever, measles or whooping cough. I shall endeavor to stir up the Board a little and will have a better report for you in one year from now.

ST. MARYS—Pop., 4,000—Dr. W. E. Schoonover, H. O.

4 Very poor, indeed. Privy vaults, pig sties, illy ventilated cellars, filthy premises, streets, etc., and some places poor drainage, and no safeguard whatever against contagious or infectious diseases.

5 Our village council appointed themselves as the Board of Health and cleaned a few gutters and alleys. They never adopted any rules or ever even requested a notification of contagious diseases by the physicians.

6 Nearly all; a few use cisterns.

7 About two hundred.

8 No.

10 Yes, several.

11 No.

12 None whatever.

13 They have no orders.

There have been a great many cases of typhoid fever and an epidemic of whooping cough, and several deaths from each. But none were reported as our Board requires nothing and keeps no record of such things.

SAINT PARIS—Pop., 1,200—Dr. C. A. Offenbacher, H. O.

4 Not very good; the privy vault, hog pen and saloon nuisances.
5 None.
6 All.
7 Three hundred.
8 No.
10 None reported or found.
11 No.
14 Scarlet fever, 4 cases.

Owing to the excellent health and freedom from contagious diseases during the year, the Board has been literally dead, imagining they had nothing to do unless in an emergency.

SALEM—Pop., 7,000—Dr. Paul E. Barckhoff, H. O.

4 Our sanitary condition is very good except that an open stream used for sewerage purposes courses through the centre of the city.

5 During the cholera scare the Health Officer made a systematic inspection of the houses inhabited by foreigners for four successive weeks, visiting their homes twice a week and having them thoroughly scrubbed out and cleaned; and also keeping on the lookout for new comers and keeping careful watch over them. The streets and alleys were all cleaned out.

6 About one-fourth per cent.
7 One, which will be abated at an early date.
8 No.

10 We had isolated cases of typhoid fever which were supposed to have been infected through well water.

11 No, because the Board believed that it could not be done lawfully.
12 We recommended the non use of wells and the introduction of city water.
13 No.

14 Diphtheria, 97 cases, 14 deaths; scarlet fever, 23 cases, 4 deaths; typhoid fever, 32 cases; whooping cough, 24 cases.

SALINEVILLE—Pop., 2,500—James Carter, H. O.

4 It is good at present; its defect was unproper drainage which has been remedied this summer.

5 The railroad authorities were notified to be on the lookout for immigrants, but as this village is not on the main line of travel comparatively no immigrants come through here.

6 Probably 90 per cent., yet we are just completing water-works supplying pure water from springs.

7 A large per cent.
8 No.
10 None.
11 No.
13 Yes.

14 Scarlet fever, 30 cases, 3 deaths; typhoid fever, 3 cases, 1 death; whooping cough, 25 cases.

SAVANNAH—Pop., 500—W. H. Yearley, Clerk.

4 About as good as villages generally, although much might be done in the way of privy vaults and stable manure. A few people persist in keeping a few hogs.

5 Nothing, except an order to clean up things, but no attention was paid to the order and nothing was done to enforce it. We have the bare order.

6 All except two families who use cistern water.

7 Most of our people use the above ground vault, with lime and frequent cleaning.

8 Yes.

9 One hundred feet.

10 I do not know, but think not.

11. No.

13 People do not pay the attention they should to them.

14 Whooping cough, several cases.

SHAWNEE—Pop., 4,000—Dr. H. E. White, H. O.

4 The sanitary condition is fair at present. Bad drainage.

5 A general cleaning up.

6 Ninety per cent.

7 Don't know.

8 Yes.

10 No.

11 Yes.

12 There were a number of persons with typhoid fever in neighborhood, and the Health Officers had the well closed and cleaned.

13 Not as a rule.

SHELBY—Pop., 2,500—Dr. D. V. Summers, H. O.

4 Good. Greatest defect is its water supply and insufficient sewerage.

5 Complete cleaning of alleys, streets, cellars, privies, hog pens and wells.

6 Nearly the entire population is dependent upon wells.

7 Nearly all.

8 It does not.

10 Yes.

11 Yes.

12 We order them abandoned until the necessary analysis is made, and then, if found necessary, order it closed.

13 They have.

14 Diphtheria, 3 cases, 1 death; scarlet fever, 1 case, 1 death; typhoid fever, 4 cases, 2 deaths.

SHERWOOD—Pop., 500—Dr. E. J. Potter, H. O.

4 Present, good. Greatest defects, filth from outhouses and rear of stores.

5 Each person or family was served with notice to clean up premises and disinfect. Health officer, with assistant, visited every dwelling in town and viewed the premises, and gave proper advice.

6 Nearly, if not quite the whole.

7 Not a single cemented vault in town.
8 No.
10 None.
11. No.
13 Yes.

Some of our Board of Health think it unnecessary to procure blanks and books suitable to keep a record of above No. 14 question, and therefore it cannot be answered. I have endeavored to cause them to see the need of it but have failed. No record is kept of dea hs, burials or anything of the kind. Can you not compel us to act on that line?

SHILOH Pop., 650 Dr. F. L. Henry, H. O.

4 Ordinarily good.
5 None in particular.
6 Almost the entire.
7 Fifty per cent. at least of the privy vaults are uncemented.
8 Never as yet.
10 None.
11 No.
13 Yes.

Would say that our village has been extremely healthy during the last year, and to the best of my knowledge there has not been a case of contagious disease during that time. While there have been cases of contagious diseases in our surrounding country and also in our neighboring villages, we have been visited with extremely good health and have been entirely free from epidemics of any kind. Our Board of Health have tried to keep things up and in good shape and our citizens have cheerfully co-operated in same.

SIDNEY—Pop., 5 500—Dr. Edwin LeFevre, H. O.

4 It is in fair sanitary condition. Had a house to house inspection in September. Our great defects are want of sewerage and some means of disposing of garbage.

5 Had a house to house inspection during fall—including alleys, yards, etc.
6 About 75 per cent., I think.
7 One for nearly every house in town.
8 It has not succeeded in doing so in every case.
9 I think 50 feet is what is called for.
10 Yes.
11 I can not say positively that they have.
12 Several wells have been ordered cleaned and put in better shape.
13 Yes, with a few exceptions.
14 Diphtheria, 39 cases, 8 deaths; scarlet fever, 4 cases; typhoid fever, 13 cases, 3 deaths; whooping cough, 39 cases.

SMITHFIELD—Pop., 650—Dr. Wm. H. Wood, H. O.

4 Not very good. Accumulation of manure of stables and hog pens and location of privy vaults near wells.

5 None.
6 All.

7 Nearly all privy vaults are uncemented. Do not know of one that is cemented.

8 No.

10 Yes.

11 No.

13 None issued.

14 Typhoid fever, 2 cases.

We organized a Board of Health about 18 months since—have never had but one meeting, as it seems we are unable to get its members or the people here to feel that we have any need of action for improving our sanitary condition. Only two or three of us take any interest in it at all.

SMITHVILLE—Pop., 500—Jos. W. Bricker, Mayor.

4 Our village has good natural surface drainage, no malaria and has been always remarkably healthful. We have no systematic drainage and our people are inclined to be careless in regard to garbage, refuse, etc.

5 None, other than a proclamation issued by the mayor and posting of the circular issued by the State Board of Health.

6 100 per cent.

7 All are uncemented.

8 No.

10 None.

11 No, but we have had one examined and found no organic matter.

13 Yes.

14 Diphtheria, 1 death. No record was kept of cases.

SOMERSET—Pop., 1,250—Robt. B. Woodward, Mayor.

4 Good. No particular defects. We keep streets and alleys clean and permit no "nuisances" on any private property.

5 None, as considered it was not necessary.

6 All the water is clear and seemingly pure.

7 Do not know. Privies are usually built from 50 to 150 feet from wells.

8 No.

10 None.

11 No. Make them keep clean as far as possible.

SOUTH BROOKLYN—Pop., 600—R. E. Stickney, H. O.

4 We are cleaning up as fast as we can. The council will not pay any bills created by the Board.

5 There were no measures taken.

6 The whole population use well water.

7 About fifty.

8 They do.

9 Fifty feet.

10 Not now.

11 They have closed two.

12 They ordered them to discontinue using them until cleaned.

13 It is hard work to enforce the Boards orders.

14 Diphtheria, 2 cases; scarlet fever, 3 cases; typhoid fever, 8 cases.

SOUTH CHARLESTON—Pop., 1,041—Dr. M. H. Collins, H. O.

4 Our town is in very good sanitary condition. Good sewerage.

5 Our Board ordered a thorough cleaning up of all houses and yards and disinfectants used.

6 One hundred per cent.

7 Nearly all are uncemented.

8 We do.

9 100 to 300 feet if possible.

10 None that I know of.

11 None.

13 Some little difficulty at times.

SPENCERVILLE—Pop., 1,600—Dr. J. C. Pence, H. O.

4 In good condition, except that the canal is made a receptacle for too much garbage.

5 Ordered sewers put in to drain the town. Had the alleys and streets cleaned and nearly all privy vaults cleaned and disinfected.

6 All. One-sixth use from wells that are drilled into the rock.

7 There are no cemented vaults in town.

8 We have given orders to that effect.

9 Fifty feet.

10 No.

11 No.

13 Yes, except that the physicians don't report births, deaths, etc.

14 Scarlet fever, 6 cases; typhoid fever, 4 cases; whooping cough, 7 cases.

Our town is in good sanitary condition. Our physicians either neglect or refuse to report contagious diseases.

SPRINGBORO—Pop., 500—David Mering, H. O.

4 This is a very fortunately located country town, on an inclined plane, 100 feet above a running stream. Privies, cellars, drains, manure pens, represent our greatest trouble, in the order above stated. They are all well cared for.

5 No special care, only the sanitary care of the Health Officer. We cannot be the sufferers to any great extent. I think we have made no plans in regard to quarantine. We are not in reach of railroad, or any public navigation.

6 All of us.

7 I have not allowed any vaults, but have privies cleaned and hauled away on farms, etc.

8 No, only so far as the Health Officer can. No laws in regard to it have been made.

10 No, none that are used.

11 I think not.

13 Yes.

The council refused to pay my bill for services for two years. (My bill was $30 and they allowed me only $15). The Board of Health allowed my bill but the council cut it down one-half.

SPRING VALLEY—Pop., over 600—Dr. S. E. Dyke, H. O.

4 Generally the sanitary conditions are good—no special defects to speak of. The Health Officer ordered a general cleaning up of all nuisances; also furnished each family with a liberal supply of lime for hog pens, privies, etc., free of charge.

5 The board met and appointed a committee to visit every house in town, with orders to clean, whitewash, and disinfect with crude carbolic acid, lime, etc. Streets and gutters cleaned, and all deleterious matter removed. Since doing so the health was never better in our village.

6 About 100 per cent.

7 The major part are pits dug 4 to 6 feet. There are none cemented.

8 Yes, when there are new ones to build.

9 If possible not nearer than 100 feet.

10 No, not one.

11 No.

13 Yes, in every case but one.

14 Diphtheria, 2 cases; scarlet fever, 17 cases; typhoid fever, 1 case, 1 death; measles, 3 cases; whooping cough, 12 cases.

STEUBENVILLE—Pop., 15,000—Dr. A. A. Elliott, H. O.

4 The sanitary condition of the city is good. The greatest sanitary defect is lack of a general sewerage system, and arrangements for the cremation of garbage.

5 A general cleaning and inspection of the city was made.

6 About 98 per cent.

7 I do not know, but there are a great many.

8 No.

10 None that I am aware of.

11 No.

13 Yes.

14 No means of knowing, as contagious diseases are not reported.

SUMMERFIELD—Pop., 600—W. S. Finney, Undertaker.

4 Not very good. We have good natural drainage, that is all. Hog pens abound and the odor arising therefrom is as bad as can be.

5 Public ordered to clean up generally. Vaults were ordered lined and ditches opened, is ali I know off.

6 All are wells or cisterns.

7 None are cemented.

8 No.

10 Probably 3 or 4. Old cemetry above most of the town.

11 No.

13 Orders have not been enforced at all.

14 Scarlet fever, 2 cases, 2 deaths.

We might as well have no Board for all they do. The Health Officer handed me this report to make out and I have done it according to facts.

SUMMERFORD—Pop., 300—Dr. A. S. Beckwith.

4 We have (of course) no Health Officer. By request of P. M., I answer this call. This vil age is in a fair condition except vaults, which are in a bad condition to say the least.

6 100 per. cent.

7 About all.

10 No.

14 Diphtheria, 5 cases; typhoid fever, 3 cases; measles, 2 cases. (For six months ending December 1, 1892.)

SUNBURY—Dr. J. H. Gerhardt, H. O.

4 The present sanitary condition is fair. Want of sewerage. Bad condition of privy vaults and pig pens in some parts of the town.

5 Not any.

6 About 90 per cent.

7 About one hundred.

8 Yes.

9 Fifty feet.

10 No.

11 No.

13 The Board has issued no orders in the past year.

SUTTON—Pop., 3,500—L. J. Hess, Tp. Clerk.

4 Medium. Privy vaults and hog pens.

5 None.

6 50 per cent.

7 All uncemented.

8 No.

10 None.

11 No.

14 Diphtheria, 4 or 5 cases; scarlet fever, 3 cases; typhoid fever, 15 cases, 4 deaths; measles, 2 cases; whooping cough, 3 cases.

SYCAMORE—Pop., 800—R. S. Galleher, H. O.

4 Very fair: we need a little more drainage and cleaning up.

5 Gave the town a general cleaning up; ordered all privy-vaults cleaned, and all barnyards, cisterns and wells cleaned, etc.

6 About 90 per cent.

7 About one hundred.

8 No.

10 No.

11 No.

13 Yes.

14 Diphtheria, about 10 cases, 6 deaths; typhoid fever, 3 cases; whooping cough, 4 cases.

SYLVANIA—Pop., 600—Geo. A. Crandall, H. O.

4 Good. Greatest sanitary defect is perhaps the privy nuisance which are mostly on top of ground and require close watching to keep them in good order.

5 No measures taken except to order a general cleaning up of places likely to cause disease, which order has been complied with.

6 All use wells except two or three, who have springs.

7 Ten to fifteen, and as fast as new ones are constructed they will be cemented.

8 Yes. No privy-vault; cess-pool running into which a privy, water-closet, stable or sink except it be water tight shall be within fifty feet of any well or spring

10 Yes, two not used for drinking or culinary purposes, by order of Board.

11 No.

13 Yes.

14 Diphtheria, 10 cases, 3 deaths.

TIFFIN—Pop., 13,000—Dr. J. Bridinger, H. O.

4 Very good. Some few old privy-vaults and dug wells.

5 All garbage and filth removed, privy-vaults cleaned and disinfected, all sewers flushed once a week with water-works, and cellars cleaned and aired.

6 About 60 per cent.

7 Probably three hundred.

8 Yes.

9 From thirty to forty feet.

10 Some few.

11 We have ordered some abandoned.

12 Simply by written notice.

13 Yes.

14 Diphtheria, 34 cases, 8 deaths; scarlet fever, 23 cases.

Water supply from water-works could not be improved; taken from wells 150 feet deep. Sewerage complete, about 30 miles of mains and laterals. Privies required to be connected with sewers and flushing system or vaults built and cemented. Garbage removed by contract. Hogs excluded. Everything that might be the means of spreading contagious diseases looked after with vigilance and care.

TIPPECANOE CITY—Pop., 1,500—Edgar Franklin, H. O.

4 (1) Fairly good. (2) Want of proper sewerage and disposing of garbage.

5 General cleaning up of streets and alleys and premises; have ordered removal of slaughter-houses and hog pens from corporation.

6 100 per cent.

7 Three hundred.

8 Yes.

9 Fifty feet.

10 None in use.

11 No.

13 So far, yes.

14 Diphtheria, 1 case; typhoid fever, 2 cases.

TOLEDO—Pop., 90,000—Dr. Albert W. Fisher, H. O.

4 (1) Very good. (2) Old style privy vaults. (3) Sewerage into the river.

5 Establishment of quarantine station; inspection of all trains (incoming) and increase of sanitary force; thorough cleaning of city; flushing of catch-basins; inspection of water.

7 I cannot give the number, but three-fourths are of that character (uncemented).

8 Yes.

9 Thirty feet.

10 Yes, any number.

11 Yes.

12 Analysis of water; notice to quit using the same and removal of pump, or filling of well or closing the same.

13 Usually; but frequent arrests are made.

14 Diphtheria, 217 cases, 65 deaths; scarlet fever, 187 cases, 3 deaths; typhoid fever, 55 cases, 30 deaths; measles, 10 cases, 2 deaths; whooping cough, 46 cases, 7 deaths.

We intend to enforce rigid measures, and are now preparing more stringent health laws and are pushing our work with energy and do not intend to wait until spring. We are cleaning up old houses and when unfit for human habitation order out the occupants and have the houses torn down; cleaning out old vaults; enforcing connections to sewers, etc.

TONTOGANY—Pop., 400—Dr. A. Eddmon, H. O.

4 Sanitary defects: Wells are not exceeding twelve feet deep.
5 Had everything cleaned up.
6 99 per cent.
7 99 per cent.
8 Yes.
9 Fifty feet to seventy-five feet.
10 No.
11 No.
13 No; during scarlet fever a German shoemaker gave us lots of trouble.
14 Scarlet fever, 5 cases, 1 death; typhoid fever, 1 case.

UHRICHSVILLE—Pop., 4,500—Dr. J. E. Groves, H. O.

4 Very bad. All privy vaults are holes dug in the ground; wells and privy vaults close together in many places.

5 None whatever.
6 Seventy-five to ninety per cent.
7 One thousand.
8 They regulate nothing.
10 Yes.
11 No.
13 They have issued no orders, nor have they done anything.

The Board has held no meetings, have no rules, issue no orders, in fact they do nothing. The mayor does nothing at all, nor does the Board.

UNION CITY—Pop., 1,500—Dr. Wm. M. Grimes, H. O.

4 The sanitary condition is reasonably good; we are needing water-works here very badly.

5 Cleaning-up the town.

6 All use water from wells, except three or four families that use water from the water-works from Indiana.

7 There are only three or four privy vaults in the town that are cemented.
8 Yes. Fifty feet.
9 Fifty feet.
10 Yes.
11 Yes.

12 The Health Officer ordered the people using the water to quit using it until it was remedied.

13 We have had but very little difficulty the last year.
14 Typhoid fever, two cases.

The sanitary condition of our schoolhouse is good with one exception, and that is ventilation. When the rooms get a little too warm the windows are let down from the top, the cold air falls on the pupils within reach of it, and the result is, in a great many cases, cold and pneumonia. If there could be some plan devised to break the cold current of air I think it would be a great protection to the scholars, as well as teachers. I think this condition exists in the majority of schoolhouses throughout the country.

URBANA—Pop., 7,000—Dr. H. C. Houston, H. O.

4 Good. Lack of sewerage.

5 Council made an appropriation of $1,000 for cleaning alleys and streets. A house to house inspection was continued for six weeks, and an extra Sanitary policeman was employed.

6 Possibly 20 per cent.

7 About 1 500.

8 Yes.

9 Forty feet.

10 No.

11 Yes.

12 A written order from the Health Officer was sufficient in the three cases brought to our notice.

13 Except in two instances.

14 Diphtheria, 7 cases, 3 deaths; scarlet fever, 41 cases, 7 deaths; typhoid fever 3 cases, 1 death; measles, 2 cases; whooping cough, 84 cases, 3 deaths.

Our Board, by resolution, declared hog pens dangerous to the health of the community, and during the past summer requested our city council to abolish them by ordinance; this was done, although there was a bitter fight made against it by three members of the council, one of whom presented a largely signed remonstrance against the proposed ordinance. There has been very little difficulty in enforcing the law.

UTICA—Pop., 800—Dr. H. C. Dicus, H. O.

4 Decidedly bad, imperfect drainage and pollution of wells from privies and occasionally from stagnant surface water.

5 None whatever.

6 99 per cent.

7 Probably 150.

8 No.

10 Yes. Probably three-fourths of them.

11 No.

13 The difficulty has been to get any orders from the board.

14 Diphtheria, 8 cases; typhoid fever, 13 cases.

It has hitherto been impossible to get the Board of Health together, and nothing but a few first-class funerals will inaugurate sanitary reform.

VAN WERT—Pop., 6,500—Dr. E. L. Wilkinson, H. O.

4 Sanitary conditions are good except the sewerage. The few sewers we have empty into a creek running through the heart of town which goes dry in summer.

5 No special measures, except we are watching and ready to move. We kept clean and disinfected all suspicious places.

6 About 75 per cent.
7 About eight hundred.
8 Yes.
9 Seventy-five feet.
10 No.
11 No.
13 Yes.
14 Diphtheria, 13 cases, 2 deaths.

We had many cases of measles last spring but as physicians were called to attend only about 50 per cent. of them they ceased making reports.

The village council is taking steps to put down a single system of sewerage next season.

VERMILLION—Pop., 1,250—S. V. Ronk, Clerk.

4 The condition is not good; the defects are garbage and the cleanings of butcher shops and other small defects which should be removed.

5 None. The Board has not met in over a year.
6 About one in fifty.
7 About one-half.
8 They do not.
10 Not that I know of.
11 No.
13 The Board has given no orders for over a year.

I make this report in absence of a Board of Health Officer.

VERSAILLES—Pop., 1,450.—Dr. Wm. H. Rike, H. O.

4 Fair sanitary condition. We have one pond and one other point needing drainage but both are in the process of being drained with sewer tile.

5 All privy vaults were disinfected with sulphate of iron solution and some in addition with unslaked lime. Streets and alleys and lots where there were buildings were generally cleaned of rubbish etc.

6 100 per cent.
7 Two hundred.
8 Yes.
9 Fifty feet.
10 Not at present.
11 No, but have had a good many cleaned out.
12 Never had a refusal to clean out a well.
13 No.
14 Typhoid fever, 4 cases.

In further answer, to 13, we have the most trouble with non-resident property owners, but get around it by doing the work and then certifying to auditor and collecting by tax duplicate.

Frequently we have to send a second notice or make a personal visit, but have never had to arrest any one.

WADSWORTH—Pop., 1,800—Dr. C. N. Lyman, H. O.

4 Very fair. Privy vaults, pig pens and want of care in disposal of slops and garbage around dwellings.

5 None.

6 Fifty per cent.
7 One hundred and fifty.
8 Not as yet.
10 Think not.
11 No.
14 Scarlet fever, 3 cases: typhoid fever, 8cases, 1 death.

We prohibit vaults under all new privies or cess pools and as far as practicable are changing old ones. Request all new ones to be wholly above ground with freedom of access and the use of dry earth, lime or ashes.

WAPAKONETA—Pop., 4,000—John R. Mouch, H. O.

4 It is not in the best condition.
5 Not any.
6 All of them.
7 Only four or five.
8 No.
10 Quite a number of them.
11 No. •
13 Yes.
14 Diphtheria, 10 cases.

WASHINGTON C. H.—Pop., 6,000—J. M. Edwards, H. O.

4 Our streets, alleys and vacant lots are clean. No hog pens permitted. Privy vaults in fair condition. Paint creek bordering the west side of the town is undoubtedly a source of malaria. There are numerous cases of malaria fever now. There are no slaughter houses in town.

5 We had a general cleaning up of streets, alleys, etc., of everything that was thought unhealthy to remain, and are trying to keep it so.

6 Eighty per cent.
7 One thousand.
8 As far from the wells as the lot will permit.
9 From 50 to 100 feet.
10 I think there are.

11 No, but have had vaults and pig-pens, cow yards, etc., removed and wells cleaned.

12 Have had no trouble—simply notify the occupants or owners.
13 Yes, invariably.

14 Diphtheria, 5 cases; scarlet fever, 21 cases, 3 deaths; typhoid fever, 3 cases, 1 1 death; measles, 1 case.

As near as possible we comply with regulations in regard to contagious diesases, deaths, funerals, burials, births, etc.

WAUSEON—Pop., 2,500—Dr. G. H. Waddell, H. O.

4 The sanitary condition is good.
5 None.
6 All.
7 About 30 are cemented.
10 No.
11 No.
13 Yes.
14 Typhoid fever, 1 case, 1 death; whooping cough, too numerous to mention.

WAVERLY—Pop., 1,800—Geo. D. Emmitt, H. O.

4 Very good, only one case of contagious disease in the place (diphther a).

5 In October we made a house to house inspection giving notices and instructions to each family as to cleansing, etc., by which means we are in a good sanitary condition and will try and keep it so.

6 About 90 per cent.

7 Have no cemented vaults.

8 Yes, to some extent.

9 200 feet from a 45 foot well.

10 None.

11 No.

13 Very little resistance.

14 Diphtheria, 19 cases, 6 deaths; whooping cough, 6 cases.

WAYNESBURG—Pop., 800—Jas. C. Rogers, Mayor.

4 Good. Have no bad defects.

5 Kept our streets and alleys and the town in general in clean condition.

6 About one-third.

7 Haven't got a cemented vault in the town.

8 No.

10 Not any.

11 No.

13 Yes.

14 No contagious diseases.

WAYNESVILLE—Pop., 800—Dr. W. E. Oglesbee, H. O.

4 Fairly good. The drinking water, however, is not the best, but there were no cases of typhoid fever reported.

5 None, except to get the town in better sanitary condition.

6 All use wells for drinking water.

7 Nine.

8 Yes.

9 Fifty feet.

10 No.

11 No.

13 Yes.

14 No contagious diseases.

WEST ALEXANDRIA—Pop., 700—Dr. L. J. Ashworth, H. O.

4 Our town is in very good shape. The existence of too many privy vaults.

5 A thorough cleaning up of the streets, alleys and gutters was required, and also a thorough examination was made of all the private residences and business houses, and all the cellars required to be cleansed and ventilated; privy vaults emptied and disinfected; manure piles hauled away; pig pens cleaned, etc. We also placed one of the pamphlets on the prevention of cholera in each house.

6 100 per cent.

7 They are pretty numerous and I don't know of any cemented.

8 Yes.

9 Thirty feet, or if nearer to be walled and cemented.
10 I am of the opinion that there are such.
11 It has not.
13 They have with but few exceptions.
14 Diphtheria, 1 case; scarlet fever, 3 cases; typhoid fever, 1 case.

Our little town is a very healthy place, well located and good drainage, with one exception. We have one place in the suburbs where a pond of water stands in rainy weather. The council have taken some action for its drainage, but have not as yet executed the work, but will, I think, at an early date.

WEST CLEVELAND—Pop., 6,000—Dr. L. S. Smith, H. O.

4 The village of West Cleveland has no sewer but will construct one in the spring; our houses are supplied by lake water.

5 All ditches were cleaned, excavation filled, night soil removed and laying water pipe to replace with.

6 One-half.
7 Nearly all.
8 Have not as yet, on account of lake water and progress of sewer.
10 Yes.
11 Yes.
12 Have removed night soil and replaced lake water.
13 Yes.
14 Diphtheria, 9 cases, 4 deaths; scarlet fever, 12 cases; typhoid fever, 15 cases; 1 death.

The Board of Health organized October 28, 1892, and for this reason we have received incomplete information and no reported cases. Council and Health Board have taken action in constructing sewer, lake water, filling excavation and other necessary and sanitary improvements.

WEST JEFFERSON—Pop., 800—Dr. W. E. Postle, H. O.

4 Bad. No regulations whatever are enforced. Privy vaults, pig pens, manure piles.

5 None. The mayor has refused to call a meeting of the Health Board to organize after appointing. No attempt has been made to improve our sanitary condition though it is bad, there being more sickness than has been known in our town for years.

6 One hundred per cent.
7 Probably one to each family.
8 No.
11 No.

Owing to facts before stated, there has been no work done by the Board of Health for more than a year. The Health Officer's time having expired, we are now without one.

WEST LIBERTY—Pop., 1,200—Dr. Ben. S. Leonard, H. O.

4 Fair, streets and alleys are clean. The greatest defects in my judgment are uncemented privy vaults, and the use of well water; the wells are as a rule good enough, but in a few instances they are not kept clean, as they should be.

5 Have had the town well cleaned, weeds cut and burned, vaults limed, etc.

6 All use wells for drinking water.

7 About all uncemented.

8 Yes. Not less than fifty feet, except in one or two instances where lot is not large enough.

9 Fifty feet.

10 No.

11 No.

13 Yes, as a general thing we have had but little trouble.

14 Since December 31, 1891: Diphtheria, 5 cases, 1 death; scarlet fever, 4 cases; typhoid fever, 3 cases, 1 death; measles, 1 case; whooping cough, 1 death.

Whooping cough cases are not well reported, as a physician is seldom called unless case is severe, therefore cannot give number of cases.

WEST UNION—Pop., 1,000—Dr. W. R. Coleman, H. O.

4 Condition fairly good. The use of well water, and by reason of closeness of rock to surface, privy vaults are shallow.

5 General order issued to clean up, and general directions for disinfecting and purifying vaults.

6 75 per cent or more.

7 All are uncemented. Don't think there is a cemented vault in town.

8 No.

10 Yes. Judging however only by proximity.

11 No.

13 No particular effort has been made to enforce any order.

14 Typhoid fever, 2 cases.

Beginning with last June there has been the very minimum amount of sickness in the locality up to date. During the drouth water was very scarce, all wells being very low, but the general health was above the average. The two cases of typhoid fever reported, occurred outside of corporation.

WEST UNITY—Pop., 900—J. H. Tidler, H. O.

4 Condition poor. No sewers, no attention paid to the sanitary condition of the town by Board of Health.

5 None. Our board very seldom holds a meeting.

6 Have nothing but wells.

7 To my knowledge none are cemented.

8 They do not.

10 Most wells are shallow, chance for pollution great.

11 Not that I know of.

WELLINGTON—Pop., 2,000—J. J. Thomas, H. O.

4 The sanitary condition is good. We need better sewerage.

5 A thorough cleaning up and all premises put in good sanitary condition.

6 We do not use wells for drinking water. Rain water filtered is used.

7 Use dry earth closets.

13 Yes.

14 Diphtheria, 3 cases, 1 death.

WELLSTON—Pop., 7,000—F. Z. Wells, H. O.

4 Not very good; privy vaults are to contend with, ground being low and the vaults fill with water and run out on the surface.

5 Nothing was done.

6 About 80 per cent.

7 About three-quarters or more are not cemented.

8 When they come to our notice.

9 Fifty feet.

10 Yes, quite a good many.

11 No.

13 No.

14 Diphtheria, 9 cases; scarlet fever, 31 cases, 3 deaths; typhoid fever, 20 cases, 6 deaths; measles, 32 cases; whooping cough, 4 cases.

Our town has had considerable to contend with; we have gone so long without any health authorities the people think it is a terrible thing to be made do anything. We have hogs, horses, cows and geese running in our streets and you may judge how our streets and alleys look. I presented a petition to the council one month ago with one hundred names of the business men, but nothing has been done yet to stop them.

WILLSHIRE—Pop., 1,100—Dr. J. K. Ross, H. O.

4 The sanitary condition of our town is fair. The drainage of the town is defective.

5 We give a general clean up and use carbolic acid and lime for privies, vaults and cellars.

6 All.

7 No cemented privy vaults in town.

8 The present board was trying to regulate the distance but met with opposition.

9 Advised twenty feet.

10 Yes.

11 Yes.

12 By examining the water, found it unfit for use. Ordered the well closed, then ordered all water taken out and the wall washed down.

13 No. Have had a good deal of hard work to enforce orders.

14 Typhoid fever, 6 cases, 2 deaths.

WILMINGTON—Pop., 4,000—Dr. G. M. Austin, H. O.

4 The present sanitary condition is excellent. The lack of water-works, and a thorough arrangement for removing night soil and vault cleanings from the corporation are its greatest sanitary defects.

5 By a house to house visit the Board caused the removal of all rubbish and decayed vegetable matter and the thorough cleaning of all cellars, sinks, privies, vaults and drains and the removal of all other accumulations of organic matter.

6 All our drinking water is from wells.

7 About thirty.

8 Yes.

9 Fifty feet.

10 Yes, probably four or five.

11 Yes, two.

12 Orders were given the owners to fill them up.

13 Yes, without an exception.

14 Diphtheria, 5 cases, 4 deaths; typhoid fever, 10 cases, 1 death.

During the last year a garbage wagon has been established and now our garbage is taken one mile into the country.

WINTON PLACE—Pop., 1,600—Dr. E. O. McCollum, H. O.

4 Present condition is fair. Need sewers badly as there are none in the town so that it leaves the streets in a filthy condition.

5 We had everything cleaned up as good as we could without the sewers.

6 Very few.

7 Nine-tenths. All of the old ones that were built before the Health Board was organized.

8 Yes.

9 Fifty feet.

10 None.

11 Yes, one.

12 Condemned it on account of its location and ordered it closed; no trouble about closing it in the least.

13 Not all of them.

14 Scarlet fever, 1 case; whooping cough, 4 cases.

Our Board meets once a month and our town is in a pretty fair condition. General health is good and very few deaths occur here.

WOODSFIELD—Pop., 1,150—Dr. C. C. Hall, H. O.

4 Good. Privy vaults and imperfect sewerage.

5 Streets and alleys were cleaned up.

6 All.

7 About two hundred.

8 No.

10 There was one and I abated the well by filling it up. The Board declared it a nuisance and unfit for use.

13 For the most part, yes.

14 Scarlet fever, 12 cases, 2 deaths.

WOODSTOCK—Pop., 390—T. M. Owen, H. O.

4 The sanitary condition of our town is good. We get our water from wells, which are dug.

5 Gave the town a thorough inspection and caused a thorough cleaning up of streets, alleys, hog pens and privies, stables, and all other filth.

6 Ninety-five per cent.

7 Not one in town.

8 No.

10 Yes.

11 Yes.

12 Notified the family to discontinue its use.

13 Yes.

We are clean and will use our utmost endeavor to keep so.

WYOMING—Pop., 1,700—A. M. Van Wyke, H. O.

4 Generally good. Greatest defects, imperfect drainage in a few localities.

5 None. We did not see the necessity.

6 There are not half a dozen wells in the village.

7 Privy vaults generally not cemented. All cess-pools are.

8 Yes, by printed regulations of the Board

9 One hundred feet.

10 None.

11 No.

13 Yes.

14 Diphtheria, 2 cases, 2 deaths; scarlet fever, 5 cases, 1 death; typhoid fever 1 case, 1 death; measles, 2 cases.

YELLOW SPRINGS—Pop., 1,600—Dr. W. M. Haffner, H. O.

4 Pretty good at present. Privy vaults, hog pens, and imperfect drainage in certain places are its greatest defects.

5 Attempted to clean up the town generally.

6 Seventy-five per cent. use wells—the balance cisterns.

7 There are no cemented ones.

8 To some extent.

9 Fifty feet.

10 There are a few.

11 No.

13 They have been, without any legal process as yet.

14 Scarlet fever, 10 cases.

YOUNGSTOWN—Pop., 35,000—Dr. W. L. Buechner, H. O.

4 Sanitary condition is good. We should have a more extended sewer system. A supply of good water is also a problem which should be considered.

5 Some extra sanitary policemen were appointed, and people were compelled to clean up.

6 Probably not more than one-third of the population.

7 Very few; they must be built of stone or brick and cemented. About 800 such vaults were built during the year.

8 Yes.

9 Thirty feet from any house and 50 feet from any well or spring.

10 There are some polluted by surface water running in.

11 Yes.

12 Health Officer ordered them filled up, and it was done.

13 Not always, it was necessary to make arrests sometimes, and parties were several times fined for disobeying the orders of the Board; but we have always succeeded in enforcing the rules and regulations of the Board.

14 Diphtheria, 70 cases, 23 deaths; scarlet fever, 302 cases, 15 deaths; typhoid fever, 65 cases, 14 deaths; measles, 864 cases, 11 deaths; whooping cough, 46 cases, no deaths.

ZALESKI—Pop., 1,200—Dr. F. M. Smallwood, H. O.

4 So far as cleanliness goes it is fairly good. Its greatest defect is undrained cess-pool on property of B. & O. S. W. R. R.

5 A general cleaning up of entire town.
6 Entire population.
7 The great majority are uncemented.
8 Yes.
9 Forty feet.
10 No.
11 No.
13 Yes.
14 Typhoid fever, 1 case; measles, 40 cases; whooping cough, 20 cases.

ZANESVILLE—Pop., 21,000—Dr. H. T. Sutton, H. O.

4 Good. The greatest sanitary defects are our privy vaults. The old fashion vaults predominate in our city, sorry to say.

5 The Board instructed the Health Officer to employ a man in each ward to make a house to house inspection. This was done the last of September and first of October. Two weeks later the same men went back over the ground to see that the orders were complied with.

6 Ten per cent.

7 Not more than half of the privy vaults are cemented.

8 No, not by any rule of the Board.

10 No.

11 Yes.

12 We suspected from nature of surroundings it was contaminated and sent men to fill it up. The owner threatened to bring suit, but it has been two or three years since and nothing has been done yet.

13 Yes.

14 Diphtheria, 18 cases, 1 death; scarlet fever, 34 cases, 4 deaths; typhoid fever, 21 deaths, number of cases not reported.

ABSTRACT OF REPORTS

OF

DEATHS AND THEIR CAUSES

IN THE FOLLOWING

CITIES AND TOWNS IN OHIO,

FOR THE YEAR ENDING

October 31, 1892.

ABSTRACT OF REPORTS OF DEATHS AND CAUSES IN THE FOLLOWING 89 CITIES AND TOWNS OF OHIO, DURING NOVEMBER, 1891.

Place.	Population, Census 1890.	Total deaths, all causes.*	Annual rate per 1,000.	Total under one year.	Total under 5 and over 1 year.	Total zymotic diseases.	Croup and diphtheria.	Cholera infantum.	Cerebro-spinal meningitis.	Diarrhœa.	Dysentery.	Measles.	Scarlet fever.	Typhoid fever.	Whooping cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexy.	Bright's disease.	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases.	Total violence.	Premature and still-born.
Ada	2,079	2	11.54	....	......	1	......	......	......	......	......	......	......	1	......	......	......	......	1	......	......	......	......	......	......	......	......	......	......	......	1
Akron	27,601	31	13.48	3	6	6	1	......	......	......	......	......	1	1	......	5	1	1	10	2	2	......	3	......	2	1	......	......	1	6	1
Archbold	780	1	16.13	......	......	3	......	......	......	......	......	......	1	2	......	1	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Ashtabula	8,338	6	8.63	......	......	1	......	......	......	......	......	......	......	1	......	2	1	1	1	......	......	......	......	1	......	......	......	......	1	1	3
Bellefontaine	4,245	8	22.61	......	......	1	1	......	......	......	......	......	......	......	......	......	......	......	2	......	1	......	......	......	......	......	......	......	3	1	......
Bellaire	9,934	9	10.87	1	2	2	1	......	......	......	......	......	......	......	......	1	2	2	1	......	......	......	......	......	1	......	......	......	1	1	......
Bellevue	3,072	2	7.81	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	2	1	1	......	......	......	......	......	......	......	......	......	......
Bloomingburg	638	3	56.42	......	......	......	......	......	......	......	......	......	......	......	......	1	1	......	1	......	......	......	......	......	1	......	......	......	1	......	......
Caledonia	685	6	105.11	......	......	5	......	......	......	......	......	......	2	......	3	1	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Carthage	2,059	5	29.12	......	......	3	2	......	1	......	......	......	......	......	......	......	......	......	2	1	......	......	1	......	......	......	......	......	......	......	......
Carey	1,655	12	87.71	3	8	10	10	......	......	......	......	......	......	......	......	1	......	......	......	......	......	......	......	......	1	......	......	......	......	......	3
Celina	2,681	3	13.41	......	......	2	......	......	......	......	......	......	......	......	......	1	......	1	......	......	......	......	......	......	......	......	......	......	......	......	......
Chicago	1,299	3	27.69	1	2	1	......	......	......	......	......	......	......	1	......	......	......	......	......	......	......	......	......	......	......	......	......	......	1	1	......
Chillicothe	11,288	17	18.07	1	......	3	1	......	1	......	......	......	......	......	......	5	1	4	7	2	1	......	......	......	3	......	......	1	2	......	......
Cincinnati	296,908	498	20.12	78	80	105	46	......	1	6	1	......	11	22	1	96	10	62	252	1	8	26	23	10	27	9	1	58	17	27	18
Cleveland	261,353	362	16.62	81	12	81	39	3	5	1	2	......	......	11	2	54	12	31	174	4	11	14	22	22	21	6	......	33	33	20	39
Clifton	1,575	3	22.83	....	1	1	......	......	......	......	......	......	......	......	......	......	......	......	2	......	......	1	......	......	......	......	......	1	......	......	......
Clyde	2,327	4	20.62	......	......	......	......	......	......	......	......	......	......	......	......	2	......	2	1	......	......	......	......	......	1	......	......	......	......	1	......
Columbus	88,150	111	15.11	11	12	18	8	......	2	......	......	......	......	5	......	19	1	16	16	1	1	3	5	1	5	3	1	13	6	13	3
Crestline	2,911	7	28.68	......	......	4	1	......	1	......	......	......	......	1	......	2	......	2	1	1	......	......	......	......	......	......	......	......	......	......	......
Cridersville	701	2	34.23	......	......	1	1	......	......	......	......	......	......	......	......	......	......	......	1	......	......	......	1	......	......	......	......	......	......	......	1
Cuyahoga Falls	2,650	4	18.11	1	......	......	......	......	......	......	......	......	......	......	......	......	......	......	3	2	......	......	......	......	......	......	......	1	1	......	......
Dayton	61,220	96	18.98	10	16	22	14	......	1	......	......	......	......	6	......	13	3	10	47	3	3	......	3	......	7	......	......	16	11	1	9
Defiance	7,694	9	14.03	......	1	3	1	......	1	......	......	......	......	......	1	2	......	2	3	2	......	......	......	......	......	......	......	1	1	......	1
DeGraff	1,076	4	44.61	......	2	2	......	......	......	......	......	......	2	......	......	......	......	......	1	1	......	......	......	......	......	......	......	......	......	1	......
Delaware	8,224	8	11.67	....	......	......	......	......	......	......	......	......	......	......	......	4	......	4	4	......	......	1	......	......	2	......	......	1	......	......	......
Delphos	4,516	5	13.26	......	......	2	......	......	......	......	......	......	1	1	......	1	1	......	2	1	......	......	......	1	......	......	......	......	......	......	......
East Liverpool	10,956	22	24.09	......	......	12	......	5	1	......	......	......	1	2	......	3	1	2	6	......	1	......	1	......	1	......	......	3	......	1	2
Elmwood Place	1,980	2	12.17	......	2	2	2	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Fremont	7,141	8	13.44	......	......	2	......	......	......	......	......	......	......	2	......	2	1	......	2	......	......	......	......	......	......	......	......	......	......	2	......

Forest	1,126	2	21.31			2								1																	
Fostoria	7,070	5	8.40	1	1											1			4												
Geneva	2,103	3	11.43			2								1					1						1						
Hamilton	17,565	23	15.71			2	1							1		7	1	6	9	1	1				2	1		2	5		1
Hanging Rock	846	5	70.92													2	1	1	3			1						2			
Ironton	10,939	8	7.44	1	1	1							1			1		1	1			1		1	1			1	1		
Jamestown	1,101	2	21.73													1		1	1									1			
Leetonia	2,826	4	16.98	1															3			1	1	1					1		
Lima	15,987	12	9.63	2	3	6	4									1	1		5						1	3		1			
Logan	3,119	3	11.54		1	2							1																	1	
Mansfield	13,473	20	17.82	2	3	10	9				1					3		3	6	3								2		1	
Marion	8,327	10	14.41		1	3								2	1				7	2					2			3			
Middletown	7,681	5	7.81	1	3	2	1												3	1			1					1			
Millersburg	1,923	3	18.21													2		2												1	1
New London	1,096	3	33.39																										5		1
Oberlin	4,576	3	9.23													2		1	1			1									
Painesville	4,612	8	20.81			1	1									4	3	1	2	1						1				1	1
Piqua	9,030	11	14.92	1		3	2							1		1	1		4		1				3				2	1	2
Portsmouth	12,391	11	10.66		3	4	3						1						4			1			3				1	2	2
Ravenna	3,117	6	21.07			6	6																								
Reading	3,103	2	7.74																2				1					1			
Ripley	2,125	5	28.02	1	3											1	1		2	1	1								2		1
Salem	5,780	12	24.91	1	3	5	2								3	1	1		5			2			1			1	1		
Sandusky	18,171	8	5.19			1	1												6				2		1			2		1	
Shawnee	3,2[illegible]1	2	7.38																										1	1	
Shelby	1,977	1	17.19			1										1		1	3	1				1							
Sidney	4,8[illegible]0	2	4.96																2						1			1			
S. Charleston	1,041	2	23.07			2		1				1																			
Springfield	31,895	35	13.17	3	2	4	1							2		6	2	4	18	1	2		3	1	1	1		2	6	1	1
Tiffin	10,80[illegible]	8	8.88			1	1									1		1	4			1	1					2		2	
Toledo	81,431	121	17.83	23	22	27	18		1					5		16	5	10	52	2	1	2	3		6			8	11	5	19
Uhrichsville	3,842	3	9.37			1	1									1	1		1								1				1
Union City	1,2[illegible]9	2	19.66													1		1	1												
Urbana	6,510	6	11.06		2	3	1						1	1					1		1								1	1	
Wadsworth	1,571	2	15.21													1		1	1						1						
Washington C. H.	5,712	4	10.15	3															4						1			1			
Wellston	4,691	17	43.46	1		6							1	5					10						1			2	1		
West Liberty	1,200	2	20.00																2									1			
Wooster	5,901	8	16.27	1		2	2											1	4					1	1			2	1		
Youngstown	33,220	39	14.09	7	12	11	7						2	1		4		3	16			4	1	1	3	3		3	5	3	4
Zanesville	21,509	23	13.14	1	3	8	1							5		5		5	10					2	2			1		1	2
Totals	1,233,974	1,720	16.72	214	239	411	190	7	15	7	4	1	27	86	11	285	52	189	676	39	39	59	42	41	140	28	3	177	126	104	153

Premature and still births excluded

Ashley reports one death from consumption; Hudson one death, cause not given; Girard one death from scarlet fever; Glendale one death from apoplexia; Hicksville one death from typhoid fever, and one still-birth; Mechanicsburg one death from phthisis pulmonalis; North Amherst one death from peritonitis; Springboro one death from heart disease; Versailles one death from old age; Wyoming one death from consumption.

No deaths reported for the month in Bedford, Felicity, McComb, Mentor, New Bremen, Sabina, Summerfield and Utica.

ABSTRACT OF REPORTS OF DEATHS AND CAUSES IN THE FOLLOWING 90 CITIES AND TOWNS OF OHIO, DURING DECEMBER, 1891.

Place.	Population, Census 1890.	Total deaths, all causes.*	Annual rate per 1,000.*	Total under one year.	Total under 5 and over 1 year.	Total zymotic diseases.	Croup and diphtheria.	Cholera infantum.	Cerebro-spinal meningitis.	Diarrhœa.	Dysentery	Measles.	Scarlet fever.	Typhoid fever.	Whooping-cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases.	Total violence.	Premature and still-born.
Ada	2 079	5	18.84	......	......	1	......	......	1	......	......	......	......	......	......	......	......	......	4	......	......	......	......	......	......	......	......	1	......	......	......
Akron	27,601	35	15.21	7	1	7	2	......	......	......	......	......	......	......	......	6	2	3	12	......	1	1	1	2	2	1	......	4	7	3	1
Alliance	7,607	10	15.79	......	......	2	......	......	......	......	......	......	......	......	......	......	......	......	5	......	......	......	1	......	......	......	......	2	3	......	3
Archbold	780	3	46.14	......	......	1	......	......	......	......	......	......	......	......	......	......	......	......	2	......	......	......	......	......	1	......	......	1	......	......	......
Ashtabula	8,338	11	15.82	6	......	......	......	......	......	......	......	......	......	......	......	1	......	1	7	......	......	......	2	......	3	......	......	2	3	......	......
Bellaire	9,931	20	24.16	6	1	2	......	......	......	......	......	......	......	2	......	6	......	6	10	1	1	1	2	......	3	1	......	1	......	......	......
Bellefontaine	4 245	6	16.93	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	4	......	......	......	......	......	......	......	2	......	......	......	......
Bellevue	3,052	2	7.87	......	......	......	......	......	......	......	......	......	......	......	......	1	......	......	......	......	......	......	......	......	......	......	......	......	1	......	......
Canton	26,189	25	11.45	3	3	5	5	......	......	......	......	......	......	......	......	7	......	6	10	......	......	1	2	......	......	......	......	2	2	1	......
Carey	1,605	9	67.50	1	4	7	6	......	1	......	......	......	......	......	......	......	......	......	1	......	......	......	......	......	1	......	......	......	......	1	......
Carthage	2,059	3	17.47	......	......	2	2	......	......	......	......	......	......	......	......	......	......	......	1	......	......	1	......	......	......	......	......	......	......	......	......
Celina	2,681	2	8.94	1	......	......	......	......	......	......	......	......	......	......	......	......	......	......	2	......	......	1	......	1	......	......	......	......	......	......	......
Chillicothe	11,288	20	21.26	2	1	7	2	1	......	......	......	......	2	1	......	3	......	3	10	3	1	......	......	......	3	1	......	2	......	......	......
Cincinnati	296,908	875	35.56	101	111	206	56	......	......	5	2	1	12	11	3	133	14	89	456	8	9	69	25	5	42	20	3	160	45	35	46
Cleveland	261,353	392	17.99	82	60	76	53	1	1	1	......	......	2	6	4	51	9	30	210	7	7	15	31	16	19	12	4	52	36	20	37
Clifton	1,575	4	30.47	......	......	1	1	......	......	......	......	......	......	......	......	2	......	2	1	......	......	......	......	......	......	......	......	1	......	......	......
Clyde	2,3[illegible]7	3	15.47	......	1	......	......	......	......	......	......	......	......	......	......	1	1	......	2	......	......	......	......	......	......	......	......	......	......	......	......
Columbus	88,1[illegible]0	185	25.18	15	23	59	17	1	1	1	......	......	3	4	1	25	......	21	75	2	6	4	5	4	9	1	......	34	9	13	12
Conneaut	3,241	6	22.21	1	1	1	......	......	......	......	......	......	......	......	......	1	......	1	3	1	......	......	1	......	......	......	......	1	......	......	......
Crestline	2 911	2	8.24	......	......	2	......	......	......	......	......	......	......	......	2	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Cuyahoga Falls	2,650	4	18.11	1	......	1	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	3	......	......
Dayton	61,220	163	31.96	17	14	20	11	......	1	......	2	......	......	......	1	20	3	15	90	3	......	7	3	2	13	1	......	45	6	4	7
Defiance	7,694	7	11.05	2	1	3	......	......	1	......	......	......	......	1	......	......	......	......	1	......	......	1	......	......	......	......	......	......	2	......	......
Delaware	8,224	18	26.26	2	......	4	......	......	......	......	......	......	......	2	......	3	......	3	9	......	......	......	......	......	2	1	......	4	2	......	......
Delphos	4,516	5	13.28	......	......	1	......	......	......	......	......	......	......	......	1	1	1	......	3	......	1	......	......	......	......	......	......	......	......	......	......
East Liverpool	10,956	13	14.21	2	......	8	2	......	......	......	......	......	......	2	......	2	......	2	3	1	......	......	......	1	1	......	......	......	......	......	1
Elmwood Place	1,9[illegible]0	5	30.50	1	......	1	1	......	......	......	......	......	......	......	......	......	......	......	3	......	......	......	......	......	2	......	......	1	......	......	......
Fel city	1,200	2	20.00	......	......	2	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Fostoria	7,070	4	6.77	......	......	2	1	......	......	......	......	......	......	......	......	......	......	......	2	......	......	......	......	1	1	......	......	......	......	......	......
Fremont	7,141	11	18.48	......	......	2	......	......	......	......	......	......	......	1	......	4	1	3	4	1	......	......	......	......	3	......	......	......	1	......	......
Galion	6,326	4	7.52	1	......	2	......	......	......	......	......	......	......	......	......	......	......	......	1	......	......	......	......	......	1	......	......	......	......	1	......

Glendale	1,441	9	71 71	......	......	1	......	......	......	......	......	......	......	......	......	2	1	1	6	1	1	......	......	2	......	......	......	2	......	......	......
Hanging Rock	816	8	113. 7	1	......	......	......	......	......	......	......	......	......	......	......	2	1	1	5	......	......	......	......	......	1	......	......	4	......	......	......
Ironton	10,939	19	20 81	3	......	3	......	......	......	......	......	......	2	......	......	3	......	3	12	......	......	......	1	......	2	......	......	5	1	......	2
Jamestown	1,101	4	43.47	......	1	......	......	......	......	......	......	......	......	......	......	1	......	1	3	......	......	......	......	......	......	......	......	3	......	......	......
Lectonia	2,826	2	8.49	......	......	1	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	1	......
Lima	15,987	22	16.57	1	5	10	10	......	......	......	......	......	......	......	......	1	......	1	9	1	......	......	......	1	5	......	1	1	1	1	......
Lockland	2,471	9	43 25	3	......	1	......	......	......	......	......	......	......	1	......	1	......	1	5	......	......	2	......	......	......	......	......	3	......	......	......
Logan	3,119	3	11.5	......	......	1	......	......	......	......	......	......	......	......	......	......	......	......	2	......	......	......	......	......	......	......	......	......	......	......	......
Mansfield	13,473	21	11.28	2	2	5	5	......	......	......	......	......	......	......	......	4	1	2	10	1	......	......	......	......	4	......	......	1	1	1	......
Marion	8,327	11	15.85	......	......	3	2	......	......	......	1	......	......	......	......	2	2	......	6	2	1	......	......	......	......	......	......	3	......	......	1
Miamsburg	2,952	3	12.19	......	......	......	......	......	......	......	......	......	......	......	......	1	1	......	2	......	......	......	......	......	1	......	......	1	......	......	......
Middletown	7 681	21	32.81	1	2	6	1	......	......	......	......	......	1	1	......	3	......	......	7	......	......	......	......	......	......	2	......	1	1	4	......
Millersburg	1,923	2	12 48	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	2	......	......	......	......	......	......	......	......	2	......	......	......
Nelsonville	4,558	4	10.53	1	......	......	......	......	......	......	......	......	......	......	......	1	......	1	2	......	......	......	1	......	1	......	......	......	......	......	......
North Amherst	1,648	6	43 68	......	......	4	......	......	1	......	......	......	......	3	......	1	......	1	1	......	......	1	......	......	......	......	......	......	......	......	1
Oberlin	4,376	6	16 45	......	......	2	1	......	......	......	......	......	......	......	......	1	......	1	3	......	......	......	......	......	1	......	......	2	......	......	......
Painesville	4,612	3	7.81	......	......	......	......	......	......	......	......	......	......	......	......	2	......	2	......	......	......	......	......	......	......	......	......	......	......	1	......
Piqua	9,090	18	23 76	......	......	3	......	......	......	......	......	......	......	......	......	4	1	3	1	1	......	......	......	......	......	......	......	3	6	1	......
Portsmouth	12,391	24	23.23	2	3	4	2	......	......	......	......	......	......	......	......	3	......	3	11	3	......	3	......	......	3	......	......	2	4	2	3
Ravenna	3,417	6	21 07	......	......	1	1	......	......	......	......	......	......	......	......	......	......	......	1	......	......	......	......	......	......	......	......	4	......	1	......
Reading	3,103	4	15.47	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	4	......	......	......	2	......	1	......	......	1	......	......	......
Ripley	2,125	10	56.17	......	......	3	......	......	......	......	......	......	......	......	......	2	......	2	1	......	......	......	......	......	......	......	......	1	......	......	......
Sabina	1,080	2	22.22	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	2	......	......	......	......	......	......	......	......	1	......	......	1
Salem	5,780	10	20.76	1	3	2	2	......	......	......	......	......	......	......	......	1	1	......	6	......	......	......	......	......	......	......	......	1	......	......	......
Sandusky	18,471	12	7.80	......	......	4	......	......	......	......	......	......	......	......	......	2	......	......	4	......	......	......	......	......	1	......	......	2	......	......	......
Sidney	4,850	9	22 27	2	......	1	......	......	......	......	......	......	......	......	......	3	1	2	5	1	......	......	......	......	......	......	......	1	......	......	......
S. Charleston	1,041	5	57.69	......	1	......	......	......	......	......	......	......	......	......	......	4	......	4	1	......	......	......	......	......	......	......	......	1	......	......	......
Springfield	31,895	61	22.94	5	6	12	......	......	......	......	......	......	......	......	......	5	1	4	26	1	......	3	2	2	3	2	......	7	14	3	6
Tiffin	10,801	16	17 77	......	......	4	1	......	......	......	......	......	......	2	......	3	1	2	3	2	......	......	......	1	......	......	......	......	......	1	......
Toledo	81,4 4	138	20.34	29	14	21	7	......	1	4	......	......	1	2	3	14	5	9	71	3	......	7	6	3	9	4	......	16	21	8	14
Uhrichsville	3,842	4	12.49	1	......	1	1	......	......	......	......	......	......	......	......	1	......	1	1	......	......	......	......	......	1	......	......	......	1	......	......
Urbana	6,5.0	13	23 96	1	......	3	......	......	1	......	......	......	......	......	......	1	1	......	8	2	......	......	......	......	2	......	1	1	1	......	......
Versailles	1,38	3	25.99	......	......	1	......	......	......	......	......	......	......	......	......	1	......	1	1	......	......	......	......	......	......	......	......	1	......	......	......
Wadsworth	1,571	2	15.28	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	2	......	1	......	......	......	......	......	......	1	......	......	......
Washington C. H	5,742	5	10.44	1	......	......	......	......	......	......	......	......	......	......	......	1	1	......	4	1	......	......	......	1	2	......	......	......	......	......	1
Wellston	4,691	7	17.93	......	......	2	1	......	......	......	......	......	1	......	......	......	......	......	5	......	......	......	1	......	1	......	......	......	......	1	3
West Liberty	1,200	5	50.00	......	......	5	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Wooster	5,901	16	32 51	1	2	3	2	......	......	......	......	......	......	......	......	......	......	......	10	2	......	......	1	......	2	......	......	5	3	......	......
Wyoming	1,454	2	16.50	......	......	1	1	......	......	......	......	......	......	......	......	......	......	......	1	......	......	......	......	......	......	......	......	......	......	......	......
Xenia	7,301	15	24.65	1	1	6	3	......	1	......	......	......	1	......	......	1	......	1	8	......	1	......	......	......	1	......	......	5	2	......	......
Youngstown	33,220	60	21 67	8	3	13	4	......	......	......	......	2	2	......	......	3	1	2	11	......	2	2	5	3	1	4	......	12	14	5	7
Zanesville	21,009	20	11.43	3	2	5	2	......	......	......	......	......	......	1	......	1	......	1	10	......	2	......	......	......	......	......	......	2	1	1	1
Totals	1 432,270	2,488	20.85	320	277	126	206	3	10	11	5	3	27	40	15	342	40	236	1227	49	34	120	92	46	139	50	11	411	192	110	154

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* Premature and still-births excluded

Deaths from LaGrippe :—Akron 3, Cincinnati 101, Columbus 27, Dayton 3, Delaware 2, East Liverpool 4, Felicity 2 Fremont 1, Galion 2, Geneva 1, Ironton 1, Lockland 1, Logan 1, Middletown 2 Oberlin 1, Piqua 3, Portsmouth 1, Ripley 3, Sandusky 3 Sidney 1, Springfield 7, West Liberty 5, Wyoming 1, Xenia 1, Youngstown 1, Zanesville 1 ; total 179.

Bloomingburg 1 death from pneumonia, Chicago 1 death from violence, Doylestown 1 death from gastritis, Forest 1 death cause not stated, Garrettsville 1 death from consumption, Geneva 1 death from la grippe, Girard 1 death from bronchitis, McComb 1 death from marasmus, Mentor 1 death from violence, New Lisbon 1 death from dropsy, Shawnee 1 death from heart disease, Shelby 1 death from apoplexia, Utica 1 death from locomotor ataxia and 1 from pneumonia The following report no deaths: Ashley Caledonia, Dalton, Hicksville, Hudson, Lorain, Mechanicsburg, Springboro, Union City.

† Deaths from la grippe not included in totals.

ABSTRACT OF REPORTS OF DEATHS AND CAUSES IN THE FOLLOWING 105 CITIES AND TOWNS OF OHIO, DURING JANUARY, 1892.

Place	population, census 1890.	Total deaths, all causes.*	Annual rate per 1,000.*	Total under one year.	Total under 5 and over 1 year.	Total zymotic diseases.	Croup and diphtheria.	Cholera infantum	Cerebro-spinal meningitis.	Diarrhœa.	Dysentery	Measles	Scarlet fever.	Typhoid fever	Whooping cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease.	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases.	Total violence	Premature and still-born.
Ada	2,079	3	17.31	....	....	....	....	....	....	....	....	....	....	....	....	1	1	....	1	1	....	....	....	....	....	....	....	....	....	1	....
Akron	27,601	56	24.35	12	5	17	3	....	1	....	....	....	....	....	....	9	2	7	27	2	1	1	3	3	1	1	....	15	3	....	8
Alliance	7,607	11	17.36	....	....	1	....	1	....	....	....	....	....	....	....	2	....	1	7	....	....	....	....	....	....	....	1	6	1	....	2
Ashtabula	8,118	13	18.71	2	1	5	1	....	....	....	....	....	....	1	....	1	....	1	3	2	....	....	....	....	1	....	....	....	....	....	....
Bellaire	9,931	19	23.95	1	3	4	2	....	....	....	....	....	....	1	....	4	....	4	6	....	....	....	1	....	....	1	....	1	2	1	....
Bellefontaine	4,245	6	16.96	2	....	.	....	....	....	....	....	....	....	....	....	....	....	....	3	....	....	2	....	....	1	....	....	....	....	....	....
Bellevue	3,052	5	27.52	1	2	3	3	....	....	....	....	....	....	....	....	2	....	2	1	....	....	....	....	....	....	1	....	....	2	....	....
Carey	1,605	5	37.37	1	2	3	3	....	....	....	....	....	....	....	....	1	1	....	1	....	....	....	....	....	....	....	....	1	....	....	1
Celina	2,684	6	26.82	1	....	2	....	....	.	1	....	....	....	1	....	1	....	1	2	....	....	....	....	....	....	....	....	2	1	....	1
Chillicothe	11,288	34	36.13	....	1	11	3	....	4	....	....	....	1	....	....	8	....	8	15	1	1	....	1	2	2	1	....	4	....	1	1
Cincinnati	296,908	653	26.39	98	101	184	16	....	1	6	2	1	7	19	....	92	14	51	337	5	12	53	26	11	27	24	....	91	29	15	52
Cleveland	261,353	471	21.62	88	60	76	11	1	1	1	1	....	2	3	6	51	10	33	275	10	1	27	29	10	23	1	....	129	59	10	53
Clyde	2,327	5	21.18	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	2	1	....	....
Columbus	88,150	121	16.47	10	13	35	7	1	2	1	....	....	3	3	1	16	4	11	47	1	7	....	2	3	6	6	....	7	9	10	11
Crestline	2,911	6	24.74	....	....	1	....	....	....	....	....	....	....	1	....	....	....	....	4	2	....	....	....	....	2	....	....	....	....	1	....
Cuyahoga Falls	2,640	7	31.85	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	5	2	....	2	....	1	....	....	....	....	1	....	....
Dayton	61,220	85	16.66	12	14	18	12	....	....	....	....	2	1	....	....	13	4	8	37	2	....	2	5	....	7	1	....	7	11	1	6
Defiance	7,691	13	20.27	. .	1	1	....	....	....	....	....	....	....	....	....	3	1	2	7	3	....	2	....	1	1	....	....	....	1	1	....
Delaware	8,221	4	5.89	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3	1	....	....	....	....	1	....	....	1	1	....	....
Delphos	4,516	7	18.60	....	....	5	1	....	....	....	....	....	....	....	2	....	....	....	1	....	....	....	....	....	....	....	....	1	....	1	1
Dunkirk	1,220	3	29.51	....	....	1	1	....	....	....	....	....	....	....	....	1	....	1	1	....	....	....	....	....	....	....	....	1	....	....	....
East Liverpool	10,956	25	27.38	1	2	13	1	....	....	2	....	....	....	....	....	3	....	3	7	....	....	....	....	....	2	....	....	3	1	....	1
Elmore	1,198	6	59.99	1	1	2	....	....	....	....	....	....	1	....	....	1	....	1	3	....	....	1	....	....	1	....	....	1	....	....	....
Forest	1,126	3	31.97	....	....	3	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Fostoria	7,070	7	11.88	2	1	5	....	....	4	1	....	....	....	....	....	1	1	....	1	....	....	....	....	....	1	....	....	....	....	....	....
Fremont	7,141	7	11.76	1	....	....	....	....	....	....	....	....	....	....	....	1	....	1	2	....	....	....	....	....	....	....	....	2	4	....	....
Gallipolis	4,498	11	29.31	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	7	....	....	1	1	....	....	....	....	3	1	1	1
Garrettsville	1,200	3	30.00	....	....	....	....	....	....	....	....	....	....	....	....	1	....	1	2	....	....	....	....	....	....	....	....	2	....	....	....
Geneva	2,103	9	51.42	....	....	5	....	....	....	....	....	....	1	....	....	....	....	....	4	....	....	....	....	....	1	....	....	2	....	....	....
Girard	2,150	6	33.48	1	....	....	....	....	....	....	....	....	....	....	....	2	1	1	1	....	....	....	....	....	....	....	....	1	3	....	....
Glendale	1,441	3	24.93	....	....	1	....	....	1	....	....	....	....	....	....	....	....	....	2	....	1	....	....	1	....	....	....	....	....	....	....

Hamilton	17,567																														
Hanging Rock	846	6	56.81													1		1	4						1	1		2			
Hicksville	2,141	4	22.46																4									4			1
Ironton	10 939	19	20.84	2	1	3										4	3	1	10			1						6			
Lancaster	7,555	21	33.41	3	1	5		4								5	1	3	10							3		7		1	1
Leetonia	2,826	3	12.73			1	1									1		1	1									1			2
Lima	15 987	23	17 26	5	5	7	6									6		4	8						1	2		4			
Lockland	2,494	4	17.81			2													2												1
Logan	3,119	8	30 77			1										1		1	4			1				1			1	1	
Lorain	4 863	6	14.81	1	1														6	1					1			3			
Mansfield	13,473	21	18 71	3	4	10	8						1			4	2	2	6						3	1		3			
Marion	8,327	9	12.96		2	3					2			1					2									2	3	1	
Middletown	7,681	16	24.99	5		4	1			1				1		1		1	11	2		2	2	1	2			1			2
New Bremen	1,.39	3	29.03			2													1							1		1			
New Lisbon	2.278	10	52 67			4													6		1										
North Amherst	1 648	7	50.97													2		2	4	1								3		1	
Oberlin	4,376	10	27.42			3										3	1	2	3						1			1	1		
Painesville	4 672	6	15.62			2								1		1		1	2	1		1								1	
Piqua	9,090	11	14 52			1										1		1	5							1		4	3		
Portsmouth	12,394	28	27 11	3	3	9	2							2		7		7	8	1					2			3	2	2	2
Ravenna	3,417	7	24.57			1	1									1		1	5	2								1			
Ripley	2,125	11	62 11	2		1								1					4				1					3	6		
Sabina	1 080	3	33 33		2	2	1									1		1													
St Paris	1 115	4	41.92													3		2	1												
Salem	5 780	4	8.13																3			1						1	1		
Sandusky	18,471	24	15 59			2										1		1	17	1		5			2			9	2		
Shawnee	3,251	6	22.15			4													1									1			1
Shelby	1,987	3	18 18			1										1	1		1	1											
Sidney	4,850	10	24.74		1	3								1		1		1	4										1	1	
S. Charleston	1,041	8	92.30	2		5			2							1		1	2			1						1			
Springfield	31,895	41	15.42	9	2	6	1									9	1	7	8			1	1	2	4	1		6	9		3
Tiffin	10,801	24	6 66			2	1									2	1	1	12	1	1	1		1	3			5			
Toledo	81,434	142	20.92	11	7	22	5		2	1	1	1		1		18	3	11	50			16	7	2	10	2		20	14	2	17
Uhrichsville	3,842	9	28.11	2		1										1		1	5					1	3			1		1	
Urbana	6 510	11	20.27			4										1		1	6	1				1				4			
Washington C. H.	5 742	6	12.51	4		1			1							1		1	4	2					2						1
Wellston	4,694	8	20.45		3	2							1		1																
West Liberty	1,2 0	3	30.0																2												
Wooster	5 901	19	38.61		3	1	1									2		2	9			1	1		1			6		1	
Xenia	7,301	19	31.23	1	2	2										4	2	2	11		1		1			2		7		1	1
Youngstown	33,220	58	20.95	12	8	11	2					1	1		2	5	1	4	38	1	3	4	3	4	6	1		12	6		2
Zanesville	21,009	30	17.14	5	2	10			1					1		4		3	13	1				2	1	2		2	2	1	1
Totals	1,281,010	2 315	20.1	313	259	3 7	159	7	20	14	6	5	20	38	13	321	56	217	1130	49	32	132	87	48	128	57	1	413	138	57	153

* Premature and still-births excluded

Deaths from La Grippe: Akron 13 Ashtabula 3 Bellefontaine 3, Cincinnati 81, Columbus 14, Clyde 2. DeGraff 1, Delphos 2. East Liverpool 7, Forest 3, Gallipolis 2, Geneva 4, Lockland 1, Logan 1, Mansfield 1 New Bremen 2, New Lisbon 4, Oberlin 3, Painesville 1, Piqua 1, Portsmouth 5, Sandusky 2, Shelby 1, Sidney 2, South Charleston 3. Springfield 3, Urbana 4 Xenia 1, Youngstown 2 Zanesville 8.

Amelia reported 1 death from Bright's disease, 1 heart disease; Archbold 1 scarlet fever, 1 heart disease; Bloomingburg 1 consumption, 1 pneumonia; Caledonia 1 Bright's disease, 1 cause not given; Carthage 1 consumption; Clifton 1 rheumatism; Cridersville 1 consumption, 1 premature birth; Dalton 1 heart disease, 2 old age; DeGraff 1 consumption, 1 la grippe; Doylestown 1 consumption, 1 gastritis; Elmwood 1 diphtheria, 1 bronchitis; Hudson 1 heart disease 1 old age; Jamestown 1 heart disease 1 pneumonia; Lowellville 1 from whooping cough; McComb 1 consumption one cause not given; Mechanicstown 1 scarlet fever, 1 consumption; Miamisburg two consumption; Millersburg 1 heart disease; New London 1 pneumonia 1 paralysis; Reading 1 apoplexia, 1 pneumonia; South Brooklyn 1 gastritis, 1 heart disease; Springboro 1 consumption; Summerfield 1 heart disease; Union City 1 consumption, 1 heart disease; Wadsworth 1 heart disease; Wyoming 1 violence.

The following report no deaths: Ashley Chicago, Felicity, Mechanicsburg, Mentor, Utica and Versailles.

† Deaths from la grippe not included in totals.

ABSTRACT OF REPORTS OF DEATHS AND CAUSES IN THE FOLLOWING 107 CITIES AND TOWNS OF OHIO, DURING FEBRUARY, 1892.

Place.	Population, Census 1890	Total deaths, all causes.*	Annual rate per 1,000.*	Total under one year.	Total under 5 and over 1 year.	Total zymotic diseases.	Croup and diphtheria.	Cholera infantum.	Cerebro-spinal meningitis.	Diarrhœa.	Dysentery.	Measles.	Scarlet fever	Typhoi l fever.	Whooping cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease.	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases.	Total violence.	Premature and still-born.
Ada	2,079	3	17.31	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	2	......	......	......	......	1	1	......	......	......	......	......	......
Akron	27,601	29	12.61	6	2	7	......	......	2	......	......	......	1	......	......	6	1	4	12	......	......	......	3	3	2	......	......	4	4	......	2
Alliance	7,607	10	15 79	......	1	3	......	......	......	......	......	......	1	1	......	1	......	1	3	......	......	......	......	......	......	......	......	2	3	......	......
Ashtabula	8,338	10	14.38	......	......	2	......	......	......	......	......	......	......	......	......	3	......	3	1	......	......	......	......	......	......	......	......	......	2	2	......
Bedford	1,043	4	46 22	1	......	1	......	......	1	......	......	......	......	......	......	......	......	......	2	......	......	......	......	......	......	......	......	2	......	1	1
Bellaire	9,931	6	7 25	1	......	......	......	......	......	......	......	......	......	......	......	......	......	......	4	......	......	......	......	......	2	......	......	1	2	......	1
Bellefontaine	4,245	8	22.61	2	2	3	1	......	......	......	......	......	2	......	......	1	......	1	4	1	2	1	......	......	......	......	......	......	......	......	......
Bellevue	3,052	4	15.73	2	......	2	1	......	......	......	......	......	......	......	......	......	......	......	2	......	......	......	1	......	1	......	......	......	......	......	1
Canton	26 189	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Carey	1 605	4	29.90	......	......	1	1	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Carthage	2,059	3	17.47	......	......	1	1	......	......	......	......	......	......	......	......	1	......	1	1	......	......	......	......	......	......	......	......	1	......	......	......
Chillicothe	11,288	21	22 32	1	2	5	1	1	......	1	......	......	......	......	1	7	......	6	7	3	1	2	......	......	1	......	......	......	1	1	......
Cincinnati	296,908	569	23.65	101	89	101	37	1	1	5	2	......	5	9	1	108	15	60	300	8	13	43	17	15	22	17	......	68	32	14	51
Cleveland	261 353	425	19.51	112	31	72	21	1	1	3	2	......	2	1	3	62	7	38	221	6	3	26	44	7	21	9	2	51	59	11	41
Clifton	1,575	4	30.47	......	......	2	2	......	......	......	......	......	......	......	......	1	......	1	1	......	......	......	......	......	......	1	......	......	......	......	......
Clyde	2,327	8	41.25	......	1	......	......	......	......	......	......	......	......	......	......	3	......	2	4	......	......	1	......	......	......	......	......	2	1	......	......
Columbus	88,150	110	14.97	12	9	27	3	......	4	......	......	......	4	4	......	22	4	17	49	2	6	3	4	5	10	4	......	9	3	4	10
Conneaut	3,241	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Crestline	2.911	7	28 90	......	......	......	......	......	......	......	......	......	......	......	......	2	1	1	4	......	1	......	......	......	1	......	......	2	......	1	1
Cuyahoga Falls	2 650	5	22 63	1	......	......	......	......	......	......	......	......	......	......	......	......	......	......	2	......	......	1	......	......	......	......	1	......	3	......	......
Dayton	61,220	82	16 07	12	5	11	2	......	1	......	......	......	......	2	......	19	1	16	31	......	1	4	1	2	2	1	......	7	13	3	......
Defiance	7 694	8	12 48	......	......	......	......	......	......	......	......	......	......	......	......	2	1	1	5	......	......	1	......	3	......	1	......	......	1	......	2
Delaware	8 224	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Delphos	1,516	6	15.72	......	......	2	......	......	......	......	......	......	......	......	......	1	......	1	2	......	1	......	......	......	1	......	......	......	1	......	......
Dunkirk	1,210	5	49.18	1	1	......	......	......	......	......	......	......	......	......	......	1	......	1	1	......	......	......	1	......	......	......	......	......	1	......	......
East Liverpool	10,956	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Elmwood Place	1,980	6	36.36	......	1	3	3	......	......	......	......	......	......	......	......	2	......	2	1	......	......	......	......	......	1	......	......	......	......	......	2
Elmore	1.198	7	......	1	1	2	......	......	......	......	......	......	......	1	1	2	1	1	3	......	......	1	......	......	2	......	......	......	......	......	......
Fostoria	7,070	12	16.97	3	......	2	......	......	......	......	......	......	......	2	......	......	......	......	5	......	......	......	......	......	3	2	......	......	5	......	......
Fremont	7,111	7	11.76	1	......	......	......	......	......	......	......	......	......	......	......	1	......	1	5	......	......	1	......	......	1	......	......	1	2	......	......
Galion	6,326	6	11 38	......	......	2	1	......	......	......	......	......	......	......	......	1	1	......	3	......	......	......	......	......	2	......	......	......	......	......	......

Gallipolis	1,498	13	31.66	1	3	2	1							1		2		2	9	1		1		1	2	1		3			
Geneva	2,103	6	31.27			3													3									3			
Glendale	1 414																														
Hudson	1,119	3	32.11																1										2		
Ironton	10,939	12	13.16	2	2											1		1	10			2		1	1	1		2	1		
Lancaster	7,555	5	7.94			1										1		1	5	1					2						1
Leetonia	2,825																														
Lima	15,987	23	17.26	2	4	5	4						1			6	2	3	8						3	2		2	[illegible]	1	
Lockland	2,474	3	14.51	1															3									2			
Logan	3,119	8	30.77		2	2	1									3	1	2	1			1							2		
Lorain	4,8 3	3	74.07	1															1							1			1	1	
Mansfield	13,473	17	13.66			2										2		2	7						1			4	6		
Marion	8,327	12	17.28	2	2	6	6												5						3			2		1	
Mentor	520	4	92.31																2					1				1	2		
Middletown	7,681	10	15.62	2	3	3	1			2						3		3	4	1						2		1			2
Nelsonville	4,558	3	7.89	1												1		1	2						1	1					
New Paris	842	3	42.75	1												2		2	1				1								
New Lisbon	2,278	4	21.05			3													1		1										
North Amherst	1,648	11	80.09		1	2										1		1	6			2				1		3		2	
Oberlin	4,376	8	24.13			1							1			3		2	3	2								1	1		
Painesville	4,612	4	10.41													1		1	1									1	2		
Piqua	9,090	11	14.52	1	1	3	1							1		4	1	1	3				1	2					1		
Portsmouth	12,394	27	26.15	5	4	4	2							1		5	1	4	15	1	1	1		1	3			5	1	1	4
Ripley	2,125	3	16.94		1	1	1												1									1	1		
Sabina	1,080	3	33.33			1			1										2									2			
Salem	5,780	7	14.5	1	1	1	1												5									1		2	1
Sandusky	18,471	16	10.38			7	5			1						1		1	6						1	1		3		1	
Shawnee	3,251	8	29.35																6								1	4	1	1	
Shelby	1,977	4	21.21			2			1										2									2			
Sidney	4,850	8	19.79	1	1	3	2												5									3			
Springfield	31,8 5	50	18.80	12	5	7								1		5	1	4	25		1	2	2	1	2	1		12	11	2	4
Tiffin	10,801	11	12.22			3	1									2	1	1	2							1		1	3	1	
Toledo	81,434	103	15.17	24	10	15	5					1	2		2	9	1	7	53	2	2	5	4	1	4	3		17	22	4	10
Uhrichsville	3,842	7	21.86	2	2	1	1									1	1		5						1	1		1			
Urbana	6,510	11	21.46	1												4	1	3	6	3		2				1			1		
Washington C. H.	5,742	10	20.90	3		1							1			1		1	5							2					
Wellston	4,691	17	43.46			10							9	1					3		1				1					2	
Wooster	5,901	1	8.14			1													1						1				2		
Xenia	7,301	10	16.43													7	1	5	3					1							2
Youngstown	33,220	46	16.6	11	9	5	2					2	1																		
Zanesville	21,009	32	18.28	6	3	9							2			4		4	13	1	1			2	1	1		4	6		8
Totals	1,266 528	1,916	18.28	314	193	363	109	3	15	12	4	4	33	27	8	321	46	215	8 4	12	36	101	80	48	104	55	4	234	2 0	57	110

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*Premature and still-births excluded.

Deaths from La Grippe:—Akron 2, Alliance 1, Ashtabula 1, Bellevue 1, Celina 1, Cincinnati 27, Cleveland 21, Columbus 9, Dayton 1, Delphos 1, Galion 1, Geneva 3, Logan 1, Mentor 3, New Lisbon 3, New Bremen 1, Piqua 1, Portsmouth, 1, Sidney 1, Toledo 2, Utica 2, Wooster 1, Zanesville 5.

Amelia reported 1 death from bronchitis, 2 from consumption 1 from pneumonia, and 1 from violence; Bloomingburg 1 old age; Celina 1 la grippe, 1 peritonitis; Chicago 1 apoplexia; Dalton 1 diphtheria, 1 premature birth; Doylestown 1 diphtheria; Felicity 1 pneumonia; Forest 1 violence; Hanging Rock 2 pneumonia; Jamestown 1 measles, 1 cancer; McComb 1 cancer; Mechanicsburg 1 consumption, 1 still-birth; Miamisburg 1 septicæmia, 1 heart disease; New Bremen 1 la grippe; Reading 1 consumption, 1 heart disease; St. Paris 1 heart disease; South Charleston 1 typhoid fever, 1 heart disease; Summerfield 1 heart disease; Union City 1 consumption; Utica 2 la grippe; Versailles 1 convulsions; Wadsworth 1 malarial fever, 1 heart disease; Waverly 1 typhoid fever; West Liberty 1 cancer, 1 still-birth; Wyoming 1 scarlet fever, 1 consumption

The following report no deaths: Archbold, Ashley, Caledonia, Cridersville, Girard, Hicksville, Millersburg, New London, Ravenna and Springboro.

†Deaths from La Grippe not included in totals.

ABSTRACT OF REPORTS OF DEATHS AND CAUSES IN THE FOLLOWING CITIES AND TOWNS OF OHIO, DURING MARCH, 1892.

Place. (99)	Population, census 1890.	Total deaths all causes.*	Annual rate per 1 000.*	Total under one year.	Total under 5 and over 1 year.	Total zymotic diseases.	Croup and diphtheria.	Cholera infantum.	Cerebro-spinal meningitis.	Diarrhœa.	Dysentery.	Measles.	Scarlet fever.	Typhoid fever	Whooping cough.	Total constitutional diseases.	Cancer	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy	Pneumonia	Total developmental diseases.	Total violence.	Premature and still-born.
Akron	27,601	41	17 82	2	1	5	1	......	......	......	......	......	......	......	......	10	2	8	18	3	......	......	2	1	5	2	......	5	5	3	5
Alliance	7,607	10	15.7	......	1	4	......	......	......	......	......	......	1	......	......	2	2	......	3	......	......	......	1	......	......	......	......	......	1	......	1
Ashtabula	8 338	12	16.29	4	1	2	......	2	......	......	......	......	......	......	......	2	......	2	3	......	......	......	......	1	1	......	......	1	4	1	1
Bedford	1,01[illegible]	3	[illegible]	.	......	......	......	......	......	......	......	......	......	......	......	......	......	......	2	......	......	......	......	......	......	......	......	1	......	1	......
Bellaire	9,931	18	21.75	4	[illegible]	....	......	......	......	......	......	......	......	....	......	2	......	2	10	1	1	......	1	......	......	3	......	3	4	2	......
Bellefontaine	4, 45	10	28 23	......	......	2	1	......	......	......	1	...	......	....	......	......	......	......	6	......	3	......	......	1	1	......	......	1	......	2	......
Bellevue	3,[illegible]52	4	15.73	......	2	1	......	......	......	......	......	......	......	......	1	......	......	.....	1	......	......	......	1	......	......	......	......	......	2	......	1
Canton	26 189	....	....	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Carey	1,605	3	22 4[illegible]	....	2	......	2	......	......	......	......	......	......	......	....	......	....	......	1	......	1	......	......	......	......	......	......	......	......	......	......
Carthage	2,059	4	23 3[illegible]	......	... ..	1	......	......	......	......	......	......	......	......	1	2	......	1	1	......	......	......	......	......	......	1	......	......	......	......	......
Chillicothe	11,288	19	21.[illegible]9	4	2	1	1	......	......	......	......	......	......	......	......	5	1	4	8	1	......	......	1	......	......	......	......	3	2	2	......
Cincinnati	296,908	5[illegible]9	21 82	103	98	89	41	......	3	2	2	......	5	8	5	94	11	56	308	9	9	41	24	11	24	14	1	82	31	17	47
Cleveland	261 35[illegible]	472	21 66	1[illegible]3	55	77	26	3	3	1	3	4	2	10	2	65	14	42	262	4	5	22	61	20	28	7	......	63	45	23	33
Clyde	2 327	6	[illegible]0.90		1	......	......	......	......	......	......	......	......	......	......	2	1	1	3	....	......	......	......	1	......	1	......	1	1	......	1
Columbus	88 150	1[illegible]0	17.69	18	21	31	8	....	9	1	1	......	3	1	1	23	2	20	[illegible]5	1	......	3	4	4	9	9	......	18	9	9	11
Crestline	2 911	5	20.61	1	2	2	......	......	......	......	......	......	......	1	1	......	......	......	3	......	......	......	......	1	......	......	......	2	......	......	1
Cuyahoga Falls	2,6[illegible]0	3	13.59	1	... ..	2	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	1	......	......
Dalton	61[illegible]	5	98.36	......	......	......	......	......	......	....	......	......	......	......	......	......	......	......	3	......	......	......	......	3	......	......	......	......	2	......	......
Dayton	61,220	119	23.3	5	11	15	5	1	1	.....	.....	.....	1	3	......	18	2	13	59	5	......	5	2	2	6	3	1	6	13	2	6
Defiance	7,691	9	14.03	2	......	......	......	......	......	......	......	......	......	......	......	......	......	......	3	2	......	......	......	......	......	......	......	1	4	2	3
Delaware	8 224	......	....	....	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Delpho	[illegible],516	10	26.52	.....		2	......	1	......	......	......	......	......	......	......	1	......	1	4	......	1	......	......	......	......	......	......	2	2	1	......
East Liverpool	10 9[illegible]	16	17.50	3	2	7	......	......	......	......	......	3	......	......	......	......	......	......	7	......	......	......	......	......	1	2	......	3	......	......	......
Elmore	1,198	4	40.02	......	......	3	......	......	......	......	......	.....	3	.....	......	......	......	......	1	......	......	......	......	......	1	......	......	......	......	......	......
Elmwood Place	1,9[illegible]	5	30 03	2	1	2	1	1	......	......	......	......	......	......	......	1	.....	1	2	......	......	1	......	......	......	......	......	......	......	......	......
Fostoria	7 070	4	6.7[illegible]	2	1	......	......	.....	.....	......	......	......	.....	......	. ....	1	......	1	3	......	......	......	1	......	......	......	......	......	......	......	1
Fremont	7,1[illegible]1	6	10 08	.....	......	1	.....	......	....	......	......	......	......	....	......	1	......	1	3	.....	......	......	......	......	1	.....	......	2	1	......	......
Galion	6,[illegible]26	7	13 27	......	......	1	......	......	1	......	......	......	......	......	......	......	......	......	4	1	......	......	......	......	1	......	......	2	......	2	......
Gallipolis	4,498	14	37.33	2	1	7	......	......	......	1	.....	......	......	5	......	2	......	2	4	......	......	......	......	1	1	......	......	2	......	1	3
Garrettsville	1,200	5	50.0[illegible]	1	......	3	......	......	......	......	......	......	1	......	......	2	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Geneva	2 103	3	17.13	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	3	......	......	......	......	2	......	......	......	1	......	......	......

Glendale	1,444																														
Hudson	1,119	3	32.05																1							1					
Ironton	10,939	13	14.26	1		1				1						3		3	7			1			1			2	1		
Lancaster	7,555	15	23.82	4		1			1							5		4	5			1	2		2						
Leetonia	2,826	5	21.23	1	1	1	1												3		1		1					1		1	
Lima	15,987	12	9.01	1	2	3	2									3	1	1	4	1				1	1			1	1		1
Lockland	2 474	3	16.31	1	1	1										1			1			1									1
Logan	3,119	7	26.92		1	2	1									2		2	3						3						1
Lorain	4,863	8	19.75	2	1	2			1										5	1	1			1		1		1		1	
Mansfield	13 473	15	13.36	1	1	1	1									4		3	8						3			2	2		
Marion	8,327	14	20.14	4		3	1			2						2	2		5	2								3	2	2	2
Mechanicsburg	1,459	4	32 88		1											1		1	2						1			1	1		
Mentor	520	4	92.31																2		1				1			1	1		
Middletown	7,681	24	37.50	4	3	9	6			1						6	3	3	9	2			1	1	1	4					
Millersburg	1,923	4	24.99													2		2	2							1					1
Nelsonville	4,558	5	13 15	1												1		1	3					1		1			1		1
New Lisbon	2,278	8	42.11			2								1		2		2	4						2						
Oberlin	4,376	4	10.97			1							1			2	2		1									1			
Painesville	4,612	6	15 61			3										2		2	1									1			
Piqua	9,090	14	16.48	2	1	1	1									4		3	5	1					1				3	1	
Portsmouth	12,394	21	20 33	1	1	4			2		1			1		3		3	11						3	1		4	3		1
Ravenna	3 417	19	31.64													1		1	7	1	1		1		2		1	1			
Reading	3,103	3	11 60													1		1	2					1				1			
Sabina	1,080	3	33.33	1												1		1	2							1		1			2
Salem	5 780	5	10 38		1											1		1	4	1					2						
Sandusky	18,471	19	13 64			6	4		2							2	1	1	9				2	1		1			2		
Shawnee	3,2 1	7	25 84		1	1										3		3	2									1	1		
Sidney	4,850	8	19.78	1															6					1		1		3		2	
Springfield	31 985	55	20 59	11	5	4	2									11	1	9	28	3	3	1	2		5			4	11	1	4
Summerfield	580	3	62.07		2	2			1				1						1						1						
Tiffin	10,801	9	9.99																4						2	1	1		4	1	
Toledo	81,431	94	12.6	19	1	16	8		1					1	2	14		12	47	1	2		5	1	8	4		9	1	3	10
Uhrichsville	3 812																														
Urbana	6,510	10	18.43	1	1	3	1						1			2		2	3						1					2	
Washington C. H.	5,742	9	18.81			4			1				2			1		1	4					1		2		1			
Wellston	4,691	11	28 14			3	1					1							8		1	3				2		2		2	
Wooster	5, 0	5	10 17			1			1							2		2	2						1						
Xenia	7,301	11	18.08	1	2	1										3	1	2	7						1	3		3		1	
Youngstown	33,220	46	16.61	7	9	10	3		1			1	1			4		2	27	2	2	3	1		3	2		11	9	1	5
Zanesville	21,000	27	15 42	3	1	1							1			4	1	2	18		1	2	1		4	1		6		2	2
Totals	1257,929	2,041	19.47	385	256	350	119	9	28	8	8	9	23	32	13	322	47	23	1059	43	35	87	119	61	130	70	5	260	184	100	152

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* Premature and still-births excluded.

The following places reported deaths from influenza: Akron 1, Alliance 2, Cincinnati 11, Cleveland 9, Columbus 4, Dayton 1, Delphos 1, East Liverpool 2, Fremont 1, Garrettsville 2, Lockland 1, Logan 1, Middletown 2, Painesville 2, Toledo 2, Washington C. H., 1, Youngstown 2.

Ada reports 1 death from cholera infantum and 1 from pleurisy; Archibald 1 puerperal fever; Ashley 1 bronchitis; Bloomingburg 1 laryngitis, 1 hepatic abscess; Celina 1 puerperal fever, 1 pulmonary abcess; Chicago 2 violence, 1 still-birth; Conneaut 1 bronchitis; Dunkirk 1 convulsions, 1 old age; Fairport 1 typhoid fever, 1 meningitis; Felicity 1 old age; Forest 1 consumption, 1 diphtheria; Hicksville 1 consumption, 1 convulsions; McComb 1 meningitis; Miamisburg 1 exhaustion; New Bremen 1 consumption; New Paris 1 Bright's disease, 1 developmental disease, 1 violence; North Amherst 2 consumption, 2 still-births; Ripley 1 consumption, 1 developmental disease; Shelby 1 apoplexia; South Brooklyn, 1 Bright's disease, 1 heart disease; Union City 1 epilepsy, 1 still-birth; Versailles 1 old age, 1 still-birth; Wadsworth 1 heart disease.

The following places report no deaths: Caledonia, Clifton, Cridersville and Hanging Rock.

Deaths from La Grippe not included in totals.

ABSTRACT OF REPORTS OF DEATHS AND CAUSES IN THE FOLLOWING CITIES AND TOWNS OF OHIO, DURING APRIL, 1892.

Place. (97)	Population, census 1890.	Total deaths, all causes.*	Annual rate, per 1,000.*	Total under one year.	Total under five and over one year.	Total zymotic diseases.	Croup and diptheria	Cholera infantum.	Cerebro-spinal meningitis	Diarrhœa.	Dysentery.	Measles.	Scarlet fever.	Typhoid fever.	Whooping cough.	Total constitutional diseases.	Cancer	Phthisis pulmonalis.	Total local diseases.	Apoplexia	Bright's disease.	Bronchitis	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developemental diseases.	Total violence.	Premature and still-born.
A a	2,079	3	17.31	...	...	1	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	1	...	...
Akron	27,601	36	8.10	9	4	3	1	...	...	...	...	...	...	...	...	[illegible]	3	3	19	2	...	1	2	2	6	2	...	4	3	5	5
Alliance	7,607	11	14.73	1	2	2	1	...	...	...	...	...	...	...	...	2	...	2	5	1	1	...	...	...	...	...	...	1	1	1	1
Ashtabula	8,338	12	17.26	3	1	...	...	...	...	...	...	...	...	...	...	2	...	2	5	...	...	...	2	1	1	...	1	...	4	1	...
Bedford	1,043	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bellaire	9,931	11	13.28	4	...	1	...	...	...	...	...	...	...	...	...	3	...	3	7	...	...	...	2	1	1	1	...	1	...	...	1
Bellefontaine	4,245	11	31.06	2	...	1	...	...	...	...	...	...	...	...	...	6	...	6	2	...	...	...	...	...	...	1	...	1	2	...	1
Canton	26,189	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Carey	1,605	3	22.19	...	...	3	[illegible]	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Chillicothe	11,288	25	26.57	5	6	5	2	...	...	...	...	...	...	...	1	5	...	[illegible]	12	3	...	2	...	...	2	...	...	5	...	3	3
Cincinnati	296,908	495	20.60	81	81	74	28	...	2	3	1	2	1	4	5	107	8	65	268	5	8	21	23	14	32	22	1	53	24	22	54
Cleveland	261,353	411	18.87	91	60	[illegible]	25	...	4	1	1	2	4	2	2	61	4	4	235	5	6	14	43	16	27	15	...	51	57	20	40
Clifton	1,575	3	22.85	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	1	...	...	1	...	...	...
Columbus	88,150	84	11.66	15	11	12	5	...	1	...	...	...	...	2	1	17	2	13	43	3	5	3	4	...	6	4	1	12	4	8	15
Conneaut	3,241	3	11.11	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	1	1	...	...	...	...	...	...	...	...	...	1	...
Crestline	2,911	7	28.86	...	2	...	...	...	...	...	...	...	...	...	...	1	1	...	5	2	1	...	1	...	1	...	...	...	...	1	1
Cuyahoga Falls	2,[illegible]	5	23.63	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	2	...	...	...	...	...	1	...	1	...	...	2	...
Dayton	61,220	92	18.03	16	11	7	3	...	1	...	...	...	...	...	1	25	2	20	16	1	...	2	6	...	1	5	1	4	6	7	13
Defiance	7,691	8	12.48	1	1	2	...	...	1	...	...	1	...	...	...	3	1	2	1	...	...	...	...	1	...	...	...	...	2	...	1
Delaware	8,224	11	16.05	...	...	1	...	...	...	...	...	...	...	1	...	4	...	4	6	...	...	...	...	...	1	1	...	2	...	...	...
Delphos	4,516	5	13.[illegible]9	...	...	2	...	...	...	...	...	...	...	...	1	...	...	...	3	1	...	...	...	...	1	1	...	...	...	...	...
East Liverpool	10,956	1	17.53	...	1	7	...	1	...	...	...	3	...	2	...	1	...	1	6	...	...	...	...	1	1	2	...	1	...	2	...
Elmwood Place	1,980	3	13.6[illegible]	...	...	...	...	...	...	...	...	...	...	...	...	3	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...
Fostoria	7,070	4	6.79	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	...	...	...	1	...	2	...	...	1	...	...	2
Gallipolis	4,498	7	18.66	...	...	...	...	...	...	...	...	...	...	...	...	2	...	1	5	1	1	...	...	2	1	...	...	...	...	...	1
Geneva	2,103	4	22.82	...	...	...	...	...	...	...	...	...	...	...	...	2	...	2	2	1	...	...	...	1	...	...	...	...	...	...	...
Girard	2,150	6	33.49	...	2	2	...	...	...	...	...	1	1	...	...	1	...	1	3	...	...	1	...	...	...	...	...	1	...	...	...
Glendale	1,141	4	32.54	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	1	1	...	...	...	...	1	...	...	1	...	...
Hudson	1,119	3	32.14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

Ironton	10,969	8	8.77	2	...	...	...	...	...	...	...	...	...	...	...	3	1	2	4	...	...	...	...	...	...	...	...	1	...	...	...
Lancaster	7,555	14	23.56	3	3	2	...	...	...	...	...	...	1	...	...	6	...	6	6	...	...	2	...	1	3	...	...	...	...	...	...
Leetonia	2,826	4	16.91	2	1	2	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	1	...	1
Lima	15,987	13	9.70	2	3	6	1	2	1	1	...	...	...	...	...	2	...	1	4	...	1	...	...	1	...	1	...	1	...	1	...
Lockland	2 474	5	24.19	1	...	1	...	...	...	...	...	...	...	...	...	1	...	1	3	...	...	...	...	...	1	...	...	1	...	...	1
Mansfield	13,473	15	13.36	2	3	3	2	...	1	...	...	...	...	...	...	2	1	1	8	2	...	2	...	...	...	...	...	1	...	2	...
Marion	8,327	14	20.17	2	...	5	1	...	1	...	2	...	1	...	...	5	1	1	1	1	...	...	...	...	...	...	...	...	2	1	...
Mechanicsburg	1,459	4	32.88	...	1	1	...	...	...	...	...	...	...	1	...	...	...	...	3	...	...	...	...	...	1	...	...	1	...	...	...
Mentor	520	3	69.23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...	2	...	...
Middletown	7,681	7	10 96	1	1	[illegible]	2	...	...	...	...	...	...	...	...	...	...	...	4	...	...	1	...	1	...	...	...	2	...	...	1
Nelsonville	4,558	3	7.89	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	...	...	...	1	...	...	1	...	1	...	...	2
New Lisbon	2,278	8	42. 1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	5	...	...	...	...	...	3	...	...	2	2	...	...
North Amherst	1,6 8	3	21.82	...	...	...	...	...	...	...	...	...	...	...	...	2	...	2	1	...	...	...	...	...	...	1	...	...	...	...	1
Painesville	4 612	5	13. 1	1	...	2	1	...	...	...	...	...	...	...	...	1	...	1	2	...	...	...	...	1	1	...	...	...	...	...	...
Piqua	9,090	7	9.24	1	1	1	...	...	...	...	...	...	...	...	...	1	...	1	1	...	...	...	...	...	...	...	...	1	1	...	...
Portsmouth	12 394	28	27 11	6	...	2	...	...	1	...	...	...	...	1	...	6	...	6	15	...	...	...	1	1	5	2	...	1	4	1	2
Ravenna	3 417	3	10 31	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	2	1	1	...	...	...	...	...	...	...	...	...	...
Reading	3,103	6	23. 2	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	5	...	2	1	...	...	...	...	...	2	...	...	...
Ripley	2 125	4	22.53	...	...	...	...	...	...	...	...	...	...	...	...	3	...	3	...	...	...	...	...	...	...	...	...	...	1	...	...
Salem	5,780	6	12.46	...	1	...	...	...	...	...	...	...	...	...	...	2	...	1	3	...	...	1	...	...	...	...	...	...	...	1	1
Sandusky	18,471	9	5.81	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	5	...	...	...	3	...	...	...	...	...	2	...	...
Shawnee	3 251	5	18 4	3	1	1	1	...	...	...	...	...	...	...	...	...	...	...	[illegible]	...	...	...	3	...	...	...	...	...	1	...	...
Shelby	1,977	5	30 30	...	...	1	...	...	...	...	...	...	...	...	...	2	1	1	1	...	...	...	...	...	...	1	...	...	...	1	...
Sidney	4 850	4	9.89	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	...	...	...	...	1	...	...	...	1	...	...	...
Springfield	31,895	45	16.93	7	9	8	2	...	...	...	...	2	2	1	...	8	2	1	26	1	3	1	3	2	...	2	...	6	6	2	5
Tiffin	10,801	19	21.11	...	...	1	1	...	...	...	...	...	...	...	...	2	1	1	11	...	1	1	...	1	5	...	...	...	...	2	...
Toledo	81 434	129	19.01	31	21	21	5	1	2	...	...	...	...	3	2	17	2	13	69	1	1	9	7	[illegible]	5	2	...	4	15	1	18
Uhrichsville	3 842	5	15.62	2	1	3	3	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	1	...
Urbana	6 510	8	11.76	...	...	2	...	...	1	...	...	...	...	...	...	1	1	...	3	2	...	...	...	...	...	1	...	...	2	...	...
Washington C. H.	5,742	4	8 36	1	1	2	...	...	...	...	...	...	...	...	...	1	...	1	1	...	...	...	...	...	...	...	...	1	...	...	1
Wellston	4,694	8	20.45	...	...	2	...	...	1	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...	1	...
Wooster	5,901	7	8. 0	...	...	2	...	...	...	...	...	...	1	...	...	1	...	1	2	1	...	...	...	...	1	...	...	...	2	...	...
Xenia	7,301	15	23.28	1	...	...	...	...	...	...	...	...	...	...	...	9	1	7	3	...	...	1	...	1	1	...	...	...	1	1	...
Youngstown	33,220	5	18.42	14	7	10	3	...	...	1	...	...	2	2	...	6	...	6	26	...	1	1	3	1	6	2	...	3	10	1	2
Zanesville	21 009	31	17.75	5	1	7	3	...	...	...	...	...	1	...	...	8	...	8	13	1	...	1	...	1	...	1	...	3	3	...	1
Totals	1,267,822	1,8 3	17.23	337	216	202	98	5	19	7	1	11	17	9	13	351	35	51	9 4	11	6	69	108	55	119	69	5	191	131	93	176

Ashley reports 1 death from cystitis; Bellevue 1 from cholera infantum; Caledonia 1 from Bright's disease and 1 from rheumatism; Carthage 1 from bronchitis; Celina 1 from diarrhœa, 1 from peritonitis and 1 still-birth; Chicago 1 from violence; Clyde 1 from cancer and 1 from apoplexia; Cridersville 1 from erysipelas; Edon 1 from consumption; Elmore 1 from apoplexia and 1 from violence; Fairport Harbor 1 from diphtheria; Fremont 1 from pneumonia; Galion 1 from cerebro spinal meningitis; Garrettsville 1 from consumption; Hanging Rock 3 deaths, cause not stated; Hicksville 1 from consumption and one from heart disease; Jamestown 1 from consumption; Logan 1 from gastro-intestinal catarrh and 1 from heart disease; Lorain 1 from convulsions and one from developmental disease; Miamisburg 1 from consumption and 1 from apoplexia; Millersburg 1 from violence; New London 1 from obstruction of the bowels and 1 from old age; Norwood 1 from scarlet fever and 1 from heart disease; Oberlin 1 from cancer and 1 from apoplexia; St. Paris 1 from consumption and 1 from pneumonia; Sabina reports 2 still-births; Union City 1 from uræmia; Wadsworth 1 from convulsions; West Liberty 1 from diphtheria and 1 from heart disease; Wyoming 1 from pneumonia and 1 from developmental disease.

Dalton, Doylestown and Felicity report no deaths for April.

* Premature and still-births excluded.

ABSTRACT OF REPORTS OF DEATHS AND CAUSES IN THE FOLLOWING CITIES AND TOWNS OF OHIO, DURING MAY, 1892.

Place. (84)	Population, census 1890.	Total deaths, all causes.*	Annual rate per 1 000.*	Total under one year.	Total under 5 and over 1 year.	Total zymotic diseases.	Croup and diphtheria.	Cholera infantum and cholera morbus.	Cerebro-spinal meningitis.	Diarrhœa.	Dysentery.	Measles.	Scarlet fever.	Typhoid fever.	Whooping cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease.	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases.	Total violence.	Premature and still-born.
Akron	27 601	43	18.71	9	1	5	1								1	12	3	9	23	2	1	2	1	3	6	3		5	2	1	3
Alliance	7, 07	5	7.89	2															2										1	1	
Amelia	600	5	10 .00													2	1	1	3		1				1			1			
Ashtabula	8,3 8	14	20. 4	3	3	2								2		4		4	5	2					1			2	2	1	
Bellaire	9,9 4	13	15.70	4	1											1		1	6			1			3	1		1	4	1	3
Bellefontaine	4,215	6	16.96	1	1	2								1		1	1		1	1									1	1	
Bellevue	3,052	5	19.67			1										2		2	1				1						1		1
Canton	26,189																														
Chillicothe	11 288	27	26.69	4	2	7	1		2						2	6	2	4	13	2	1		2	2	3		1	2		1	3
Cincinnati	296,908	437	17.66	88	43	67	22		3	2	1		7	4	4	103	1[illegible]	55	219	6	7	20	13	13	23	8		42	2[illegible]	22	40
Cleveland	261,353	416	19.10	117	[illegible]3	68	19	3	3	1	5	6	3	11	1	68	7	43	226	2	4	18	21	15	27	18	2	64	3[illegible]	20	35
Columbus	88,150	74	10 07	14	9	17	4		4	2			1	2	1	15	2	13	23	2	3	3	2	3	5	1		9	3	3	9
Cuyahoga Falls	2 614	4	18.74			2	1						1			1		1	1						1						
Dayton	61,220	89	17 41	14	11	6	2		2					1		22	2	20	52		1	2	4	3	8	6	1	6	5	2	9
Defiance	7 6 4																														
Delphos	4,516	5	13 26			3			1	1									1						1					1	
East Liverpool	10,956	15	16.42	1	2	1										1	1		13			1	2	3	1	1		5			1
Elmwood Place	1 986	5	30.30		1	5	5																								1
Elmore	1 198	3	30.04													1			2						1			1			
Findlay	18,553	4	2.53			4	1						3																		
Fostoria	7,070	5	8 8		1	1									1				4					2	2						2
Fremont	7,141	9	15.12	1												2	1	1	6	4		1			1					1	
Gallipolis	4 498	16	42.46	1	1	2							1	1		3		3	5					1	2			2	5	1	
Glendale	1,444	[illegible]	24.93																1	1									1	1	
Ironton	10,949	11	12 06		2	1	1												9			1			2	2			1		1
Lancaster	7,555	11	17.47	2	4	4	1						1			1		1	5	1			1	1	2					1	
Leetonia	2 826	3	12 7	1	1	1		1											1			1							1		
Lima	15,987	7	5 25	1	2	3	2					1							3				1	1	1					1	
Logan	3,119	4	15.38		1											3	1	1											1		
Mansfield	13,473	15	13.35	5		1										3	1	2	10	1	1				2	1		3		1	
Marion	8,327																														

Mechanicsburg	1,459	6	49.31	......	......	2	1	......	......	......	......	......	......	......	......	2	......	2	1	......	......	......	......	......	......	......	......	......	1	......	......
Middletown	7,681	7	10.93	......	1	......	......	......	......	......	......	......	......	......	......	2	1	1	5	2	......	......	......	......	......	1	......	2	......	......	......
Nelsonville	4,558	11	28.07	2	......	1	......	......	......	......	1	......	......	......	......	2	......	1	6	......	1	1	......	2	1	1	......	......	1	1	1
New Lisbon	2,278	4	16.[illegible]6	......	......	1	......	......	......	......	......	......	......	......	1	......	......	......	2	......	......	......	......	......	1	......	......	......	......	1	......
N. Straitsville	2 782	6	25.89	......	......	1	......	......	......	......	......	......	......	......	......	......	......	......	4	......	......	......	1	......	2	......	......	1	1	......	2
North Amherst	1,648	4	29.09	......	......	1	......	......	1	......	......	......	......	......	......	......	......	1	2	......	1	......	......	......	......	1	......	......	......	......	......
Oberlin	4,376	8	21.93	1	2	2	......	......	......	......	......	......	......	......	2	......	......	......	4	2	1	......	1	......	......	......	......	......	......	......	......
Painesville	4 612	3	7.81	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	3	......	......	......	......	2	......	......	......	......	......	......	......
Piqua	9,090	12	15.84	1	3	1	1	......	......	......	......	......	......	......	......	3	1	2	6	......	......	......	......	1	......	2	......	......	......	2	......
Portsmouth	12 394	21	20.33	7	1	7	2	......	......	......	......	2	1	1	......	2	......	2	9	......	......	......	......	1	1	2	......	2	2	......	1
Ripley	2,125	3	16.94	......	......	1	......	......	......	......	......	......	......	......	......	1	......	1	......	......	......	......	......	......	......	......	......	......	1	......	......
Sandusky	18,171	6	3.89	1	......	......	......	......	......	......	......	......	......	......	......	1	1	......	4	......	......	1	......	1	......	......	......	1	......	1	2
Sidney	4,8[illegible]0	4	9.89	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	3	1	......	......	......	......	......	......	......	1	......	......	......
Springfield	31,895	39	14.70	3	7	4	1	......	......	......	......	......	1	......	1	11	2	8	18	2	1	1	1	2	2	2	......	1	4	3	1
Tiffin	10,801	9	10.00	......	......	1	......	......	......	......	......	......	......	......	......	1	......	1	4	......	......	1	1	......	......	1	......	1	3	......	2
Toledo	81 434	109	16.06	22	15	[illegible]0	4	......	1	......	......	......	......	2	1	11	2	11	69	3	......	10	6	3	3	4	......	11	12	4	14
Uhrichsville	3,812	3	9.37	......	......	1	......	......	......	......	......	......	......	......	......	......	......	......	1	......	......	......	......	......	......	1	......	......	......	1	2
Urbana	6,510	11	20.27	1	......	1	......	......	......	......	......	......	......	......	1	4	......	4	6	1	......	1	......	......	3	......	......	1	......	......	......
Washington C. H.	5,742	13	27.16	2	......	1	......	......	1	......	......	......	......	......	......	3	1	2	5	1	......	......	......	......	2	1	......	1	......	4	1
Wooster	5,901	7	14.23	......	......	......	......	......	......	......	......	......	......	......	......	1	......	......	6	......	......	......	......	1	1	1	......	1	......	......	......
Youngstown	3[illegible] 2[illegible]0	35	13.63	6	4	7	2	......	......	......	......	......	3	1	......	5	......	5	17	1	......	4	......	2	2	2	......	1	5	4	4
Zanesville	21 009	23	8.37	1	......	3	......	......	......	......	......	......	......	1	......	7	[illegible]	3	8	......	......	......	......	2	1	......	......	1	2	1	2
Totals	1 239,495	1,6[illegible]9	15.8[illegible]	40	173	260	72	4	18	9	7	10	22	27	16	323	49	11	839	4	23	69	53	68	117	60	4	172	122	82	1[illegible]1

Ada reports 2 deaths, 1 from cancer and 1 from pneumonia; Celina 1 from violence and one from phthisis pulmonalis; Clifton 1 from puerperal fever and 1 from heart disease; Clyde 1 from brain softening; Crestline 1 from cancer and 1 from heart disease; Fairport 1 from pneumonia; Garrettsville 1 from phthisis pulmonalis and 1 from pneumonia; Hicksville 1 from convulsions; Jamestown 2 from whooping cough; Lockland 1 from tuberculosis and 1 from convulsions; Lorain 1 from convulsions, 1 from heart disease and 2 still-births; McComb 1 death from old age; Me[illegible] 1 from consumption; Mentor [illegible] from phthisis pulmonalis; Ravenna 1 from apoplexia; Reading 1 from convulsions; St. Paris 1 from phthisis pulmonalis and 1 still birth; Salem 1 death from syphillis; Shawnee 1 from cancer and 1 from apoplexia; Shelby 1 from spinal meningitis; Spencerville 1 death from diphtheria and 1 from peritonitis; Summerfield 1 from heart disease and 1 from old age; Wyoming 1 from apoplexia and 1 from accident.

No deaths reported for May in Cridersville, Edon, Hanging Rock, Hudson, New Bremen, New London, Versailles.

ABSTRACTS OF REPORTS OF DEATHS AND CAUSES IN THE FOLLOWING CITIES AND TOWNS OF OHIO, DURING JUNE, 1892.

Place. (96)	Population, census 1890.	Total deaths, all causes.*	Annual rate per 1 000.†	Total under one year.	Total under 5 and over 1 year	Total zymotic diseases	Croup and diphtheria.	Colera infantum and cholera morbus.	Cerebro-spinal meningitis	Diarrhœa.	Dysentery.	Measles.	Scarlet fever.	Typhoid fever	Whooping cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local disease.	Apoplexy.	Bright's disease	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis	Pleurisy	Pneumonia	Total developmental diseases.	Total violence.	Premature and still-born.
Ada	2, 79	3	17 31													1		1	2					2							2
Akron	7 601	21	9. 3	3	1											6		6	10	1	1	2	1		2	[illegible]			4	1	1
Alliance	7 607	5	7.89													1		1	3						1					1	1
Avondale	4 47	5	13 12		2											1		1	1			1	1	1		1					
Bellaire	9, 4	7	8.45	3												[illegible]		3	2			1				1				2	6
Bellefontaine	4.245	4	11. 7																1	1									2		1
Bellevue	3 052	3	11 47	1															2				1		1				1		1
Carthage	2 257	4	21. 3			1							1						3	1	1							1			
Chillicothe	11 288	15	15.94	2		2			1					1		6	1	[illegible]	5				1	2	1					2	3
Cincinnati	96 908	41[illegible]	16.65	94	38	54	5	5	1	5			3	7	3	92	16	47	198	6	8	[illegible]	17	6	20	16		23	[illegible]	8	47
Cleveland	61 353	383	17 58	[illegible]	[illegible]	87	11	23	[illegible]	5	8	8	1	20		51	8	40	186	2	4	13	36	16	17	[illegible]		32	34	25	40
Clifton	1,575	3	0 28			3	3																								
Columbus	88, 50	92	12. 2	[illegible]	11	16	6		5							16	2	14	39	2	2		3	3	6	6		[illegible]	6	15	7
Conneaut	3 41	5	18.51	1												1		1	1						1					2	
Crestline	2,91	4	16 48	1	1	1							1			1		1												1	
Dayton	61,220	103	20 18	27	9	7	2	1	3							20	5	11	47		1	3	9	1	3	2		4	13	5	11
Defiance	7,694	5	7. 0	2												2		2	3				2	1							
Delaware	8,221	5	7.29	1		1				1									2						1				1	1	
Delphos	4 516	5	13.27			1				1						1		1	3	1			1		1						
East Liverpool	10,956	16	17.51	2	2	2										3	1	2	8	1		1	1	1	2			2	1	2	
Fostoria	7 070	6	10. 8	2												3		3	3			1			2						
Fremont	7 141	14	23.53	1		2				1						2			5	1				1	2		1		3	2	
Gallipolis	4 498	7	18.6	1		1								1					6	1					2	2		1			
Ironton	10,939	11	15.36	6	2			1								3		3	9				3	2	1	1			1		1
Lancaster	7,555	9	14.29	4												2		2	5	2		1		1				1	2		
Lima	15 981	5	3.75			1	1												4					1	2	1					
Lockland	2,471	4	19 40													1		1	3		1				1	1					
Logan	3,119	3	11.54		2	1							1			1	1													1	
Lorain	4,863	5	12.33		1														2		1					1			2	1	
Mansfield	13 473	8	7.14	1	1	2	1												5	1					1			1		1	

Martin's Ferry	6,250	9	17.28	1	3	2	......	2	......	......	......	......	......	3	......	1	......	1	3	......	......	......	......	......	......	1	......	2	......	......	1
Marion	8,327	5	7.20	3	......	1	......	......	......	......	......	......	1	......	......	1	......	1	......	......	......	......	......	......	......	......	......	......	3	......	......
Middletown	7,681	8	12.49	1	1	4	2	......	......	......	......	......	......	......	......	3	1	2	......	......	......	......	......	......	......	......	......	......	1	......	2
Nelsonville	4,558	5	13.16	......	2	1	1	......	......	......	......	......	......	......	......	3	......	2	1	......	......	......	......	......	......	......	......	......	......	......	......
New Straitsville	2,782	3	12.93	......	......	......	......	......	......	......	......	......	......	......	......	1	......	1	2	......	......	......	1	1	......	......	......	1	......	......	......
North Amherst	1,648	3	21.82	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	2	......	......	......	......	......	1	......	......	......	......	2	......
Norwood	1,390	4	35.97	......	1	......	......	......	......	......	......	......	......	......	......	......	......	......	2	......	1	......	......	......	1	......	......	......	1	1	......
Oberlin	4,376	5	13.71	......	......	......	......	......	......	......	......	......	......	......	......	3	......	3	1	......	......	......	......	......	......	......	......	1	1	......	......
Piqua	9,090	9	11.88	1	......	1	......	......	......	......	......	......	......	......	1	5	......	5	2	......	......	......	.	......	2	......	......	......	1	......	2
Portsmouth	12,394	21	20.32	7	2	7	2	......	2	......	......	......	......	1	1	1	......	1	11	......	1	......	......	2	2	2	......	3	2	1	1
Ravenna	3,117	3	10.53	......	......	2	......	......	......	......	......	......	......	......	1	......	......	......	......	......	......	......	......	......	......	......	......	......	1	......	......
Reading	3,102	5	19.34	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	4	......	1	......	......	1	1	......	......	......	......	1	......
Salem	5,780	4	8.30	1	......	2	2	......	......	......	......	......	......	......	......	......	......	......	2	......	1	......	......	1	......	......	......	......	......	......	1
Sandusky	18,471	14	9.09	......	......	4	......	......	......	......	......	......	......	......	......	2	1	1	6	......	1	......	......	......	1	......	......	1	1	1	......
Sidney	4,850	4	9.89	......	......	......	......	......	......	......	......	......	......	......	......	1	......	1	2	......	......	......	......	......	1	......	......	......	1	......	1
Springfield	31,895	25	9.40	8	4	3	......	......	......	1	......	......	......	......	......	9	1	7	10	2	......	......	......	1	1	......	......	......	1	2	7
Tiffin	10,801	11	12.22	......	......	2	......	......	......	......	......	......	......	......	......	1	......	1	4	......	......	......	......	1	2	1	......	......	4	......	......
Toledo	81,434	93	13.70	24	4	13	6	1	1	......	......	......	......	......	1	21	6	11	43	2	4	2	0	2	5	1	......	4	8	8	15
Uhrichsville	3,842	3	9.79	......	......	1	......	......	......	......	......	......	......	......	......	1	1	......	1	......	......	......	1	......	......	......	......	......	......	......	1
Urbana	6,51	8	14.74	3	......	......	......	......	......	......	......	......	......	......	......	1	......	1	4	......	......	1	......	......	2	1	......	......	2	1	1
Washington C. H.	5,742	5	11.49	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	1	......	......	......	......	1	......	......	......	......	......	2	......
Wellston	4,377	6	16.45	2	1	4	......	1	2	......	......	......	......	......	......	......	......	......	2	......	1	......	......	......	1	......	......	......	......	......	......
Wooster	5,901	9	18.30	1	1	4	......	2	......	1	......	......	......	......	......	1	......	1	2	......	1	......	......	1	......	......	......	......	......	2	1
Youngstown	33,220	44	15.89	3	3	9	......	2	1	1	......	......	2	2	......	5	1	4	21	......	2	2	......	3	1	3	......	3	11	4	6
Zanesville	21,009	16	9.14	1	1	3	......	......	......	......	......	......	......	1	......	2	1	1	6	2	......	......	......	2	1	1	......	......	2	3	1
Totals	1,268,412	1,512	14.30	331	156	265	57	38	18	18	9	8	11	76	7	189	49	186	708	27	33	41	90	55	91	60	1	87	143	129	152

Amelia reports 1 death from convulsions and 1 still-birth; Arcanum 1 from tonsilitis and 1 from heart disease; Bloomingburg 2 from phthisis pulmonalis; Caledonia 1 from old age; Celina 1 premature birth; Chicago 1 from pneumonia; Clyde 1 from brain fever; Edon 1 from pneumonia; Elmwood Place 2 from diphtheria; Fairport Harbor 1 from meningitis and 1 from indigestion; Felicity 1 from heart disease; Findlay 2 from diphtheria; Galion 1 from old age; Garrettsville 2 from phthisis pulmonalis; Geneva 1 from cancer and 1 from paralysis; Hanging Rock 2 from phthisis pulmonalis; Hicksville 1 from cancer; Hudson 2 deaths, cause not stated; Kalida 1 from diphtheria; Leetonia 1 from Bright's disease and 1 from bronchitis; Mentor 1 from phthisis pulmonalis; Miamisburg 1 from dysentery and 1 from heart disease; Millersburg 1 from influenza; New Lisbon 1 from scarlet fever; New London 1 from cancer and 1 from heart disease; Painesville 1 from gastritis, 1 from heart disease and 1 still-birth; Peninsula 1 death, cause not stated; Ripley 1 from convulsions and 1 cause not stated; St. Paris 1 death; Summerfield 1 from scarlet fever; Union City 1 death.

No deaths reported for June in Ashley, Chicago, Cridersville, Cuyahoga Falls, Glendale, McComb, Mechanicsburg, Springboro, West Liberty, Wyoming.

ABSTRACT OF REPORTS OF DEATHS AND CAUSES IN THE FOLLOWING CITIES AND TOWNS OF OHIO, DURING JULY, 1892.

Place (96)	Population, census 1890.	Total deaths, all causes.*	Annual rate per 1,000.*	Total under one year.	Total under 5 and over 1 year.	Total zymotic diseases.	Croup and diphtheria.	Cholera infantum and cholera morbus.	Cerebro-spinal meningitis	Diarrhœa.	Dysentery.	Measles	Scarlet fever.	Typhoid fever.	Whooping cough.	Total constitutional diseases	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease	Bronchitis.	Convulsions	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases	Total violence.	Premature and still-born.
Ada	2,079	3	17.31	....	....	....	....	....	....	....	....	....	....	....	....	1	....	1	1	....	....	....	....	....	....	....	....	....	1	....	....
Akron	27 601	43	18.69	15	3	7	....	13	....	1	....	....	....	....	1	5	1	4	14		3	....	2	1	4	3	....	1	5	2	3
Alliance	7,607	9	14.19	2	1	4	....	2	....	....	....	....	....	2	....	1	....	1	3	....	....	....	....	....	1	1	....	....	1	....	....
Ashtabula	8,338	17	24.46	6	1	2	....	2	....	....	....	....	....	....	....	4	2	2	5	2	....	....	1	....	2	....	....	....	4	2	1
Avondale	1,473	8	21 46	....	....	....	....	....	....	....	....	....	....	....	....	3	....	3	5	....	....	1	....	....	2	....	....	2	....	....	....
Bellaire	9,934	8	9 67	2	....	1	....	....	....	1	....	....	....	....	....	2	1	1	2	....	....	....	....	....	1	....	....	1	..	2	1
Bellefontaine	4, 45	6	16.96	....	....	....	....	....	....	....	....	....	....	....	....	3	....	3	3	1	....	....	....	....	2	....	....	....	....	....	1
Bellevue	3,052	4	15 72	2	....	1	....	1	....	....	....	....	....	....	....	1	....	1	1	....	....	....	1	....	....	....	....	....	....	1	....
Carthage	2 257	6	32 34	....	....	2	....	1	....	....	1	....	....	....	....	2	....	2	2	....	....	....	....	1	....	1	....	....	....	....	....
Chicago	1,299	6	53.85	....	....	....	....	....	....	....	....	....	....	....	....		....	1	3	....	1	....	....	2	....	....	....	....	....	2	....
Chillicothe	11,288	20	21.26	3	2	9	....	2	4	....	2	....	....	....	..	2	1	....	8	3	....	1	....	1	2	1	....	....	....	1	1
Cincinnati	29 ,908	576	23 21	166	69	133	17	47	5	15	2	4	2	6	6	90	11	48	29,	2	12	11	9	15	3	24	....	25	33	25	54
Cleveland	261,353	556	25 52	244	67	2,8	12	121	4	7	25	2	6	31	....	74	11	30	180	4	6	8	.0	19	.2	14	1	10	54	30	33
Columbus	88,150	146	19.87	43	14	53	5	31	3	6	1	....	2	....	1	23	6	15	.9	1	1	....	1	5	5	7	....	7	9	13	7
Clyde	2, 27	4	.0.62	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	3	....	....	....	....	1	1	....	....		....	....	....
Conneaut	3 241	6	22.41	....	....	1	....	....	....	....	....		....	....	....	1	1	....	1	....	....	....	....	....	....	....	....	1	2	1	....
Crestline	2,911	7	.8.86	....	....	1	....	....	....	....	....	....	1	....	....	1	....	1	2	....	....	....	....	....	1	....	....	....	....	1	....
Cuyahoga Falls	2 614	4	18.28	....	....	....	....	....	....	....	....	....	....	....	....	1	....	1	2	....	....	....	....	....	2	....	....	....	....	1	....
Dayton	61,220	89	17 44	24	4	18	1	11	1	..	....	....	....	....	....	19	4	13	29	2	1	2	2	4	1	1	1	2	6	2	6
Defiance	7,694	3	4.6	....	2	2	....	1	1	....	....	....	....	....	....	....	....	....	1	....	....	....	....	1	....	....	....	....	....	....	....
Doylestown	1,131	3	31.8	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	2	1	....	....	....	1	....	....	....	....	....	....	....
East Liverpool	10,956	13	14 24	2	2	3	....	2	1	....	....	....	....	....	....	1	1	....	7	1	....	....	2	2	1	1	....	....	....	2	....
Fairport Harbor	1,000	3	36.00	2	....	2	....	2	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	..	....	....	....	....	....	....	....
Fostoria	7 070	8	13 57	4	....	3	....	3	....	....	....	....	....	....	....	2	....	2	3	1	....	....	....	...	2	....	....	....	....	....	....
Fremont	7,141	5	8 40	....	....	....	....	....	....	....	....	....	....	....	....	2	....	2	1	....	....	....	....	....	1	....	....	....	....	2	....
Gallipolis	4,498	12	32 05	....	....	3	....	....	....	....	2	....	....	....	1	....	....	....	3	1	....	....	....	....	1	....	....	1	6	....	....
Galion	6,526	8	15.17	....	....	....	....	....	....	....	....	....	....	....	....	1	1	....	6	....	....	....	....	2	1	....	1	2	....	1	1
Glendale	1 444	3	24 93	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	1	....	....	....	....	....	....	1	....	1	1
Hicksville	2,141	3	16.82	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....	....	1	....	....	....	1	....	....	....	....
Ironton	10,939	17	18.65	8	2	6	....	2	....	....	....	....	2	2	....	2	....	2	8	....	....	....	1	1	....	1	....	....	3	....	....

Lancaster	7,555	10	15.88	2	1	......	......	......	......	......	......	......	......	......	......	4	......	4	3	......	......	......	......	2	......	1	......	......	1	......	......
Lima	15,981	6	4. 0	......	......	2	......	1	......	......	......	......	......	......	......	2	......	......	2	......	......	......	......	......	1	1	......	......	......	......	......
Linwood	1,291	3	27.69	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	3	......
Lockland	2,474	6	25.02		2	4	......	1	......	......	......	......	......	2	......	......	......	......	1	......	......	......	......	......	1	......	......	......	......	1	......
Logan	3,119	8	30.77	......	......	6	......	3	......	1	......	......	1	......	1	2	1	1	......	......	......	......	......	......	......	......	......	......	......	......	......
Lorain	4,863	6	9.87	1	2	1	......	......	......	......	......	......	......	......	......	2	......	2	......	......	......	......	......	......	......	......	......	......	1	2	......
Mansfield	13,473	15	13. 2	4	1	3	1	1	......	1	......	......	......	......	......	4	2	1	6	......	......	......	......	1	-	......	......	1	1	......	......
Marion	8,327	9	12.97	2	......	3	1	2	......	......	......	......	......	......	......	2	......	1	3	......	......	......	......	......	......	......	......	......	1	......	......
Martin's Ferry	6,250	8	15. 7	2	2	2	1	......	......	......	......	......	......	......	......	1	......	......	5	......	1	......	2	......	1	......	......	1	......	......	4
Mentor	502	3	17.71	......	......	......	......	......	......	......	......	......	......	......	......	1	......	......	1	......	......	......	......	......	1	......	......	......	......	1	1
Middletown	7,681	10	15.62	3	......	5	......	2	......	......	1	......	......	......	......	1	1	......	4	1	......	......	1	......	1	......	......	1	......	......	2
Nelsonville	4,558	7	10.75	2	1	5	......	4	......	......	1	......	......	......	......	......	......	......	2	......	......	......	......	1	......	......	......	......	......	......	1
N. Straitsville	2,782	11	47.09	4	1	3	......	1	......	1	1	......	......	......	......	......	......	......	6	......	......	1	......	1	......	......	......	3	......	2	......
North Amherst	1,648	4	29.12	......	1	1	......	......	......	......	......	......	......	......	......	......	......	......	1	......	......	......	1	......	......	......	......	......	......	......	......
Norwood	1,390	3	25.89	2	......	......	......	......	......	......	......	......	......	......	......	1	......	1	2	......	......	......	1	......	......	1	......	......	......	......	......
Oberlin	4,376	4	10.97	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	4	......	......	......	......	......	......	......	......	......	......	......	1
Painesville	4,755	2	5.05	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	2	1	......	......	......	......	1	......	......	......	......	......	......
Piqua	9,090	9	10.78	3	......	3	1	2	......	......	......	......	......	......	......	1	......	1	4	1	......	......	1	......	1	......	......	......	1	1	2
Portsmouth	12,391	26	25.17	8	1	10	1	2	......	......	......	......	1	1	4	4	......	4	9	......	......	......	......	3	4	1	1	......	2	1	4
Ripley	2,483	3	14.57	......	......	......	......	......	......	......	......	......	......	......	......	1	......	1	1	......	......	......	1	......	......	......	......	......	1	......	......
Salem	5,780	6	12.45	2	1	2	1	......	......	......	1	......	......	......	......	......	......	......	4	......	......	......	......	......	1	......	......	......	1	......	......
Sandusky	18 4 1	11	7.10	......	......	3	......	3	......	......	......	......	......	......	......	3	1	2	6	......	......	......	......	......	......	......	......	1	......	......	......
Shelby	1,977	4	21.28	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	2	......	......	......	......	......	......	1	......	......	1	1	......
Sidney	4,850	6	14.84	1	1	2	......	1	......	......	......	......	......	1	......	......	......	......	3	......	......	......	......	1	......	......	......	......	......	1	1
Springfield	31,895	43	16.11	7	8	12	......	6	......	......	4	......	......	......	......	7	1	6	17	1	4	......	......	1	2	3	......	1	5	3	1
Tiffin	10,801	7	7.76	......	......	2	......	1	......	......	......	......	......	......	......	3	2	1	1	......	......	......	......	......	1	......	......	......	......	......	1
Toledo	81,434	141	21.21	57	17	51	3	29	......	15	1	......	......	2	......	20	4	13	51	2	3	5	4	2	2	6	......	4	17	5	14
Uhrichsville	3,842	7	21.86	......	......	5	2	3	......	......	1	......	......	......	......	1	......	1	......	......	......	......	......	......	......	......	......	......	1	......	......
Urbana	6,510	10	18.43	1	......	5	......	1	......	......	1	......	1	......	......	2	1	1	2	......	......	1	......	......	1	......	......	......	1	2	1
Washington C. H.	5,742	6	12.54	3	1	1	......	......	......	......	......	......	......	......	1	2	......	2	1	......	......	......	......	......	1	......	......	......	1	......	1
Wooster	5,901	4	8.13	......	......	3	......	1	......	......	......	......	......	1	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	1	......
Xenia	7,[illegible]01	9	14.79	1	......	2	......	1	......	......	......	......	......	......	......	4	......	2	5	......	1	1	......	2	1	......	......	......	......	......	1
Youngstown	33,[illegible]20	60	21.70	27	3	20	2	14	1	1	......	......	1	......	......	4	1	2	21	......	1	......	......	4	3	1	......	1	15	5	5
Zanesville	2[illegible],009	36	20.56	5	3	13	......	9	......	......	......	......	......	......	......	9	1	7	9	......	......	......	......	1	4	......	......	......	4	1	4
Totals	1276,621	2,136	20.08	668	218	656	50	329	22	51	42	6	17	52	15	333	56	192	816	25	37	31	83	73	1[illegible]0	70	5	66	75	1[illegible]0	157

Amelia reports 1 death from consumption; Celina 1 from meningitis and 1 from old age; Clifton 1 from sunstroke and 1 from Bright's disease; Delphos 1 from convulsions and 1 still-birth; Doylestown 1 from cancer and 1 from old age; Elmwood Place 1 from septicæmia and 1 still-birth; Felicity 1 from old age and 1 from heart disease; Garrettsville 1 from consumption. Geneva 1 from inflammation of bowels; Jamestown 1 from consumption; Leetonia 1 from consumption; Mechanicsburg 1 death, cause not given; McComb 1 from cerebro-spinal meningitis; McConnelsville 2 still-births; Millersburg 1 from abscess of liver and 1 from paralysis; New Lisbon 1 from old age; New London 1 from pyæmia and 1 from consumption; Peninsula 1 from spina bifida; Ravenna 1 from consumption; Reading 1 from erysipelas and 1 from bronchitis; Sherodsville 1 from diphtheria; Sherwood 1 from pyaemia; South Charleston 1 from violence; Sylvania 1 from convulsions; Union City 1 from consumption; Waynesville 1 from old age; West Liberty 1 from cancer and 1 from Bright's disease; Wyoming, 1 from diphtheria, 1 cause not given, and 1 still-birth.

The following places report no deaths for July: Ashley, Caledonia, Cridersville, Elmore, Hanging Rock, Kalida, Miamisburg, St. Paris, Smithville, Summerfield, Springboro, and Wabash township Darke Co.

ABSTRACT OF REPORTS OF DEATHS AND CAUSES IN THE FOLLOWING CITIES AND TOWNS OF OHIO, DURING AUGUST, 1892.

Place.	Population, census 1890	Total deaths, all causes.*	Annual rate per 1,000.*	Total under one year.	Total under 5 and over 1 year.	Total zymotic diseases.	Croup and diphtheria.	Cholera infantum and cholera morbus	Cerebro-spinal meningitis.	Diarrhœa.	Dysentery.	Measles.	Scarlet fever.	Typhoid fever.	Whooping cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease.	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases.	Total violence.	Premature and still-born.
Akron	27,601	49	1 .48	18	3	16	......	11	1	......	1	......	......	......	......	8	5	3	13	1	1	1	4	......	3	2	......	......	9	3	2
Alliance	7,607	13	13 11	5	......	7	......	5	......	......	......	......	......	2	......	2	2	......	3	......	......	......	......	......	......	......	......	......	1	......	......
Arcanum	1 131	4	14.39	1	......	2	......	1	......	......	......	......	......	1	......	2	......	......	......	......	......	......	......	......	......	......	......	......	......	1	......
Ashtabula	8 338	20	8 .7	5	3	8	......	7	......	......	......	......	......	1	......	2	1	1	7	1	2	......	......	1	......	......	......	2	2	1	......
Avondale	4,47	6	16.9.	1	......	1	......	......	......	......	......	......	......	......	......	1	......	1	3	1	......	......	1	......	1	......	......	......	1	......	......
Bellaire	9,931	6	14.16	1	2	......	......	......	......	......	......	......	......	......	......	2	......	2	1	......	1	......	......	......	......	......	......	......	......	2	......
Bellefontaine	4,245	7	15.73	1	2	3	......	1	......	......	......	......	......	1	......	1	1	......	3	......	......	......	1	......	1	1	......	......	1	......	......
Carthage	2 257	4	56.42	......	......	4	4	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	2
Chicago	1,299	3	17 01	......	......	......	......	......	......	......	......	......	......	......	......	2	......	2	......	......	......	......	......	......	......	......	......	......	1	......	......
Chillicothe	11,288	21	16.12	8	1	9	......	4	......	......	......	......	1	2	......	3	......	2	11	1	2	......	......	2	1	2	......	......	......	1	......
Cincinnati	296,908	395	17.72	106	54	81	12	23	4	8	2	1	1	10	......	83	5	46	18[illegible]	7	5	12	11	9	22	14	......	18	23	22	62
Cleveland	261,353	511	24.93	225	85	245	16	146	2	12	31	......	1	23	......	63	9	27	174	6	5	3	39	21	17	15	1	21	30	30	67
Clyde	2,327	3	15 38	1	......	2	......	......	......	1	1	......	......	......	......	......	......	......	1	......	......	......	......	......	......	......	......	......	......	......	......
Columbus	88,150	122	22 22	26	14	28	4	8	2	7	......	......	......	1	......	21	5	14	48	2	4	......	4	9	9	4	......	1	10	10	9
Conneaut	3,211	5	41.23	......	1	2	......	......	......	......	......	......	......	......	......	......	......	......	3	1	......	......	1	......	1	......	......	......	......	......	......
Crestline	2,911	4	27.18	......	......	......	......	......	......	......	......	......	......	......	......	1	......	1	1	1	......	......	......	......	......	......	......	......	1	1	......
Cuyahoga Falls	2,614	5	18 03	4	......	2	......	2	......	......	......	......	......	......	......	2	......	2	2	......	......	......	1	......	......	1	......	......	......	1	......
Dayton	6 ,220	97	32.75	23	12	28	......	7	3	1	1	......	......	5	1	11	3	8	34	......	......	......	......	......	8	5	......	3	11	5	5
Defiance	7,694	10	41.61	3	1	4	......	4	......	......	......	......	......	......	......	2	......	2	2	......	......	......	......	......	......	1	1	......	1	1	......
Delphos	4,516	6	15.9	......	......	5	......	5	......	......	......	......	......	......	......	......	......	1	......	......	......	......	......	......	......	1	......	......	......	......	1
East Liverpool	10 956	11	9.82	3	2	8	......	4	......	......	......	......	......	2	......	......	......	......	2	......	......	......	1	......	1	......	......	......	1	......	......
Felicity	1,076	3	10.18	......	......	1	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	2	......	1
Findlay	3,052	6	13.41	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	1	......	......	......	......	1	1	1	......	1	1	1	......
Fostoria	7,070	5	21 32	......	......	5	1	4	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	1
Fremont	7,111	10	21 88	1	2	3	......	1	1	......	1	......	......	......	......	2	......	2	5	1	......	1	2	......	......	......	......	1	......	......	......
Gallipolis	4,498	3	25.05	......	......	......	......	......	......	......	......	......	......	......	......	2	......	2	1	......	......	......	......	1	......	......	......	......	......	......	......
Glendale	1,411	3	31.49	......	......	2	......	......	......	1	......	......	......	......	1	......	......	......	1	......	......	......	......	......	1	......	......	......	......	......	1
Hicksville	1,437	3	7.61	1	1	2	......	......	......	......	......	......	......	1	......	......	......	......	1	......	......	1	......	......	......	......	......	......	......	......	......
Ironton	10,939	21	17.47	3	6	7	......	3	......	2	......	......	1	1	......	4	......	4	7	......	......	......	......	1	2	2	......	1	2	......	......
Kalida	462	3	7 51	......	......	8	2	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......

Leetonia	2,826	4	19.71	......	1	1	1	......	......	......	......	......	......	......	......	2	......	1	......	......	......	......	......	......	......	......	......	......	1	......	3
Lima	15,987	7	10.68	......	......	3	1	2	......	......	......	......	......	......	......	......	......	......	1	......	......	......	......	......	......	1	......	......	......	3	......
Lockland	2,474	3	24.41	......	......	2	2	......	......	......	......	......	......	......	......	1	1	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Logan	,119	11	15.38	4	......	3	......	......	......	......	1	......	1	......	1	1	......	1	4	......	......	......	1	1	2	......	......	......	......	1	......
Lorain	1,863	11	71.71	8	......	5	......	3	......	2	......	......	......	......	......	1	......	1	4	......	......	......	1	......	......	2	......	1	......	1	3
Mansfield	13,473	13	14.06	3	2	4	1	2	......	......	......	......	......	......	......	1	......	1	7	1	......	......	......	......	1	......	......	......	......	1	......
Marion	8,327	15	42.14	......	......	11	5	5	......	......	......	......	......	1	......	2	......	2	1	1	......	......	......	......	......	......	......	......	1	......	......
Mechanicsburg	1,549	3	18.43	......	......	2	......	1	......	......	......	......	......	......	......	1	1	......	......	......	......	......	......	......	......	......	......	......	......	......	1
Middletown	7,681	8	10.53	1	1	3	2	......	......	1	......	......	......	......	......	3	......	3	2	......	......	......	......	1	1	......	......	......	......	......	1
N. Straitsville	2,782	3	25.88	......	3	2	......	......	......	......	......	......	2	......	......	......	......	......	1	......	......	......	1	......	......	......	......	......	......	......	......
Oberlin	4,376	5	65.32	1	......	1	......	......	......	......	......	......	......	......	1	2	1	1	1	......	......	......	......	......	1	......	......	......	1	......	......
Painesville	4,612	6	30.19	......	......	......	......	......	......	......	......	......	......	......	......	2	2	......	2	......	......	......	......	......	......	......	......	......	1	1	......
Piqua	9,090	12	13.71	8	......	3	......	1	......	......	......	......	......	......	2	......	......	......	4	......	1	......	1	......	......	......	......	......	......	1	......
Portsmouth	12,394	17	7.57	2	7	10	1	4	......	......	1	......	......	1	1	......	......	......	4	......	......	......	1	......	2	......	......	......	......	1	2
Ravenna	3,417	6	18.39	......	......	1	......	1	......	......	......	......	......	......	......	3	2	1	1	1	......	......	......	......	......	......	......	......	......	1	......
Reading	3,103	3	18.40	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	3	......	......	......	......	......	1	2	......	......	......	......	......
Sabina	1,080	3	6.41	......	......	1	......	......	1	......	......	......	......	......	......	......	......	......	2	......	......	......	......	......	2	......	......	......	......	......	......
Salem	5,780	13	29.07	7	1	7	......	3	1	2	......	......	......	......	......	1	......	......	3	1	1	......	......	......	1	......	......	......	2	......	......
Sandusky	18,471	11	22.27	......	......	6	2	3	......	......	......	......	......	1	......	2	1	1	2	......	1	......	1	......	......	......	......	......	......	......	......
Shelby	1,977	3	15.4	1	......	3	......	1	......	......	......	......	1	1	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Sidney	4,850	5	8.88	1	2	1	......	......	......	......	1	......	......	......	......	......	......	......	2	......	......	......	1	1	......	......	......	......	1	1	1
Springfield	31,985	56	19.59	13	7	17	......	8	......	2	2	......	......	5	......	11	1	10	18	2	2	2	......	......	2	1	......	1	8	3	1
Tiffin	10,801	15	19.31	......	......	3	1	1	......	......	1	......	......	......	......	3	......	3	3	......	1	......	......	......	2	......	......	......	4	2	1
Toledo	81,434	167	20.27	66	29	74	1	45	......	19	3	1	......	2	......	21	7	12	46	1	1	......	1	1	1	2	3	3	18	8	25
Union City	1,293	3	30.70	......	1	2	......	1	......	......	......	......	......	......	......	......	......	......	1	......	......	......	......	......	......	......	......	......	......	......	......
Urbana	6,510	10	8.19	3	......	2	1	1	......	......	......	1	......	......	......	1	......	1	6	1	......	......	......	2	2	1	......	......	1	1	......
Washington C. H.	5,742	7	21.24	3	......	2	......	......	1	......	......	......	......	1	......	3	1	2	......	......	......	......	......	......	......	......	......	......	......	......	......
Wellston	4,091	7	22.37	......	......	5	......	1	......	......	......	......	1	2	......	......	......	......	2	......	......	......	......	......	1	......	......	1	......	......	......
Youngstown	33,220	46	16.19	15	4	16	1	8	2	......	4	......	......	......	......	5	1	1	3	1	......	......	2	2	2	2	......	1	11	4	3
Zanesville	21,009	23	13.14	2	1	6	......	3	......	......	......	......	......	2	......	4	1	3	9	......	......	......	......	1	1	2	......	......	3	1	1
Totals	1,165,963	,921	19.71	583	238	684	58	332	18	59	5[illegible]	4	10	71	7	285	50	170	652	32	28	20	77	60	92	32	6	55	153	110	196

Ada reports 1 death from peritonitis; Archbold 1 from diptheria and 1 from heart failure; Bellevue 1 from typhoid fever and 1 from violence; Caledonia 1 from diphtheria and 1, cause not stated; Clifton 1 from measles; Doylestown 1 from consumption; Elmore 1 from pleurisy; Elmwood Place 1 from peritonitis; Fairport Harbor 1 from marasmus and 1 from convulsions; Germantown 1 from Bright's disease and 1 from heart disease; Glencoe 1 from typhoid fever and two from scarlet fever; Jamestown 1 from apoplexia; Linwood 1 from diarrhœa; McComb 1 from malarial fever and 1 from entero colitis; McConnelsville 1 from tonsilitis; Millersburg 1 from peritonitis and 1 from convulsions; Mt. Sterling 1 from scarlet fever; New Lisbon 1 from old age and 1, cause not stated; New London 2 from diphtheria; North Amherst 1 from cholera infantum; Norwood 1 from cholera infantum and 1 premature birth; Smithville 1 from consumption; Versailles 1 from consumption; Wooster 1 from dysentery; Wyoming 1, cause not stated.

Ashley, Cridersville, Dalton, Mechanicsburg, St. Paris, Summerfield and Wabash township Darke Co., report no deaths during August.

* Premature and still-births excluded.

ABSTRACT OF REPORTS OF DEATHS AND CAUSES IN THE FOLLOWING CITIES AND TOWNS OF OHIO, DURING SEPTEMBER, 1892.

Place. (91)	Population, census 1890.	Total deaths, all causes.*	Annual rate per 1,000.*	Total under one year.	Total under 5 and over 1 year.	Total zymotic diseases.	Croup and diphtheria.	Cholera infantum and cholera morbus.	Cerebro-spinal meningitis.	Diarrhœa.	Dysentery.	Measles.	Scarlet fever.	Typhoid fever.	Whooping cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease.	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases.	Total violence.	Premature and still-born.
Akron	27,601	31	13.48	13	2	7	1	4		1						4	1	3	9	2	1	2	1	1	1	1			11		1
Alliance	7 607	8	13.41	2		2		2								2	1		3						1				1		1
Ashtabula	8,338	10	14.39	4		3		1						2		2	1	1	1				1						4		2
Avondale	4,473	3	8..7													1			1											1	
Bellaire	9 934	14	16.91		2	3	1	1		1						2		2	5	1	1		1	1				1	1	3	
Bellefontaine	4 24	5	11 16	1	2	3		2						1					2	1	1										
Bellevue	3,0 2	4	15 73		1	1									1	1		1	1				1						1		
Bloomingburg	638	3	56 42													2		1											1		
Chillicothe	11,288	16	17 01	3		3	2				1					4	1	3	7	1	1					1		1	1	1	2
Cincinnati	296,908	398	16.12	99	43	93	26	19	4	8	2		1	12	3	70	11	36	174	7	10	10	13	10	22	9	1	29	33	26	47
Cleveland	261,353	386	17.72	114	81	144	25	57	1	4	22		3	23	1	58	10	25	127	2	4	5	27	22	15	5		12	35	20	52
Clyde	2,327	3	15.47	1		1		1								2		2													
Columbus	88,150	113	15 38	18	17	38	11	3		8	3			13		15	4	11	31			2	2	4	10	2		2	3	21	9
Conneaut	3,241	6	2 .22			3	1	1			1								1						1					1	
Crestline	2,91	10	41 23	1	1	2										3	1	1	3	1		1	1							2	
Cuyahoga Falls	2,6 4	6	27.18	1	1	3		1					1			2	1	1	1			1									
Dayton	61, 20	81	18.69	19	8	23	2	11		1	3			4		13	2	9	33	2	2		2		9	2	1	1	8	2	9
Defiance	7 691	21	32.75	6	4	9	2	5						1		3	1	2	5			1	1	1	1	1			2	2	2
DeGraff	1 076	4	44 61			2			1					1					1		1								1		
Doylestown	1,131	3	31.83			2		1								1		1													
East Liverpool	10,956	9	9.82	3	2	5		3						1		1		1	3		1				1			1			1
Fostoria	7,070	6	10 18			2								1	1				4		1				1			2			2
Fremont	7,141	8	13.44			4				1				3		1		1	3						1	1		1			
Gallipolis	4,498	8	21.32		2	3	2	1								2		2							1						
Geneva	2,191	4	21.88																2		1								2		
Germantown	1,437	3	25.05			1													2					1	1						
Hudson	1,143	3	31.49																1						1						
Ironton	10,939	7	7.61	1	1	1								1		3	2	1	8			1									
Lancaster	7,555	11	17.47	4		5			4							2	1	1	3					3					1		
Lima	15,981	10	7.51			2					1					1		1	3					1					1	1	

Linwood	1,291	3	27.88	.....	.....	2	1	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1
Logan	3,119	4	15.39	.....	.....	2	.....	.....	1	.....	1	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....
Lorain	4,863	8	19.74	2	1	2	.....	1	.....	.....	.....	.....	.....	1	.....	3	.....	3	1	.....	.....	.....	1	.....	.....	.....	.....	.....	2	.....	.....
Mansfield	13,473	12	10.68	.....	.....	5	3	.....	.....	.....	1	.....	.....	1	.....	2	.....	1	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	.....
Marion	8,327	17	21.11	.....	.....	11	6	2	.....	.....	.....	.....	.....	3	.....	3	.....	3	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....
Mechanicstown	312	3	15.38	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	2	1	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Mentor	502	3	71.71	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	.....	.....	.....	3	.....	.....	.....	.....	.....	.....	.....	.....
Middletown	7,681	9	14 06	1	2	8	3	2	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Minerva	1,139	4	42.44	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	2	.....	1	1	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
Nelsonville	4,558	7	18.13	2	1	3	.....	3	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	2	.....	.....	.....	.....	.....	1	.....	.....	1	.....	.....	1
New Lisbon	2,278	2	10.53	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
N. Straitsville	2,782	6	25.88	1	1	2	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	3	.....	1	.....	2	.....	.....	.....	.....	.....	.....	1	.....
North Star Township	1,986	7	65.32	.....	.....	3	.....	.....	.....	.....	.....	.....	.....	3	.....	2	1	1	2	.....	.....	.....	.....	.....	1	.....	1	.....	.....	.....	.....
Norwood	1,590	4	30 19	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
Oberlin	4,376	5	13.71	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
Painesville	4,755	3	7 57	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	2	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Piqua	9 09)	11	18.39	1	3	3	1	.....	.....	.....	.....	.....	.....	2	.....	2	2	.....	4	.....	.....	.....	1	.....	.....	.....	.....	.....	3	2	.....
Portsmouth	12,591	35	18.40	4	6	13	6	1	1	.....	3	.....	.....	1	1	5	.....	5	13	.....	1	.....	.....	3	5	1	.....	2	2	2	2
Sandusky	18,471	10	6.44	.....	.....	3	.....	.....	.....	.....	.....	.....	1	1	.....	2	2	.....	2	.....	.....	.....	.....	.....	2	.....	.....	.....	3	.....	.....
Salem	5,780	14	29.07	6	3	10	4	4	.....	.....	.....	.....	.....	2	.....	1	.....	.....	1	.....	.....	.....	.....	1	.....	.....	.....	.....	2	.....	.....
Sidney	4,850	9	22 27	1	2	3	2	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	4	1	.....	.....	.....	1	.....	.....	.....	.....	1	1	1
Springfield	31,895	41	15 47	6	4	6	.....	2	.....	.....	1	.....	1	2	.....	8	2	6	18	2	2	1	.....	.....	2	2	.....	.....	13	2	7
Tiffin	10 801	8	8 88	.....	.....	3	.....	2	.....	1	.....	.....	.....	.....	.....	2	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	.....	.....
Toledo	81,431	133	19 59	43	24	16	7	19	.....	1	.....	.....	.....	9	.....	15	4	9	53	3	.....	3	4	1	8	3	.....	1	11	8	13
Union City	1 293	4	19.34	.....	1	1	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	1	2	.....	.....
Urbana	6,510	11	20.27	.....	1	4	2	.....	.....	.....	1	.....	.....	.....	.....	1	.....	1	4	.....	.....	1	.....	.....	2	1	.....	.....	1	1	2
Wadsworth	1 574	4	30.50	.....	.....	3	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Washington C. H	5,742	4	8.19	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	2	.....	2	1	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
West Liberty	1,318	4	21.21	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	2	1	1	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
Wooster	5,901	11	22.37	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	1	3	3	2	.....	.....	.....	.....	.....	.....	.....	1	3	3	.....
Youngstown	33,230	44	16.49	15	6	11	4	3	2	.....	2	1	.....	1	.....	4	.....	1	12	.....	.....	2	1	2	2	2	.....	1	11	3	3
Zanesville	21,009	23	13.11	1	2	6	.....	.....	.....	1	.....	.....	.....	2	.....	5	.....	5	11	.....	.....	1	1	.....	1	1	.....	2	.....	1	1
Totals	1222,218	1,70	16 66	380	228	5,2	116	151	16	32	43	1	9	105	7	266	54	153	597	30	29	31	61	52	97	33	3	63	175	106	159

Arcanum reports 1 death from convulsions; Carthage 1 from typhoid fever and 1 from heart disease; Chicago 1 from cerebro-spinal meningitis and 1 from apoplexia; Clifton 1 from phthisis pulmonalis and 1 from premature birth; Cridersville 1 from typhoid fever; Edon 1 death; cause not stated; Elmore 1 from diphtheria, 1 from empecina and 1 still-birth; Elmwood Place 1 from pyaemia and 1 from scarlet fever; Fairport Harbor 1 from old pneumonia; Garrettsville 1 from cholera infantum and 1 from typhoid fever; Hicksville 1 from puerperal fever and 1 from meningitis; Hubbard 2 from diphtheria; Jamestown 1 from cerebro-spinal meningitis and 1 from violence; Kalida 1 from cholera infantum and 1 convulsions; Lockland 1 from tonsilitis and 1 from consumption New London 1 from diphtheria and 1 from lock-jaw; Millersburg 1 from diarrhœa and 1 from uræmia; Peninsula 1 from diarrhœa; Shelby 1 from typhoid fever and 1 from appendicitis; Springboro 1 from typhoid fever; Summerfield 1 from rheumatism and 1 from heart disease; Waynesville 1 from general anæmia and 1 from senility.

Ada, Ashley, Caledonia, Felicity, Pioneer, Sabina, Smithville and Wyoming report no deaths during September.

*Premature and still-births excluded.

ABSTRACT OF REPORTS OF DEATHS AND CAUSES IN THE FOLLOWING CITIES AND TOWNS OF OHIO, DURING OCTOBER, 1892.

Place. (95)	Population, census 1890.	Total deaths, all causes.*	Annual rate per 1,000.*	Total under one year.	Total under 5 and over 1 year.	Total zymotic diseases	Croup and diphtheria.	Cholera infantum and cholera morbus	Cerebro-spinal meningitis.	Diarrhœa.	Dysentery.	Measles.	Scarlet fever.	Typhoid fever.	Whooping cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease.	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases.	Total violence.	Premature and still-born.
Akron	27,601	34	11.16	8	2	9	4	1	...	...	...	...	1	...	...	7	4	3	10	...	1	...	1	2	4	1	...	1	6	2	4
Alliance	7,607	6	9.47	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	3	...	...	...	...	...	...	...	...	...	...	2	1
Ashtabula	8,358	16	22.85	4	...	6	...	1	...	...	...	...	...	5	...	2	1	1	4	...	...	...	1	...	2	...	...	1	2	2	2
Avondale	4,473	7	18.75	1	2	6	3	1	...	1	...	...	1	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Bellaire	9,934	7	8.50	2	2	1	1	...	...	...	...	...	...	...	...	1	...	1	4	...	...	1	1	[illegible]	...	...	...	...	...	1	...
Bellefontaine	4,245	5	14.50	1	...	1	...	1	...	...	...	...	...	...	...	1	...	1	2	...	1	...	...	...	1	...	...	...	1	...	...
Carthage	2,257	4	21 19	...	...	...	...	...	...	...	...	...	...	...	...	2	...	1	2	1	...	1	...	...	...	...	...	...	...	...	1
Chicago	1,299	3	27 68	...	...	...	...	...	...	...	...	...	...	...	...	2	1	1	...	...	...	...	...	...	...	...	...	...	1	...	...
Chillicothe	11,288	19	19.11	2	3	9	1	...	...	...	...	...	2	1	...	4	...	4	5	1	1	...	...	...	1	1	...	1	1	...	2
Cincinnati	296 908	445	17.98	85	37	76	30	6	1	4	5	...	1	9	2	82	8	43	228	8	13	11	16	12	26	10	1	38	22	33	48
Cleveland	261,353	373	17.12	78	62	113	56	9	...	2	7	...	10	20	...	52	7	30	163	6	4	14	26	19	25	8	2	18	35	26	60
Clyde	2,327	6	30.91	2	...	2	...	2	...	...	...	...	...	...	...	...	...	...	4	...	...	...	...	...	1	...	...	...	...	...	...
Columbus	88,150	85	11.57	12	11	28	12	2	1	...	3	...	...	7	1	17	2	12	28	3	...	1	3	4	9	1	1	2	9	3	12
Conneaut	3,211	3	11 11	...	1	2	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...
Crestline	2,911	5	20.68	...	...	3	1	...	...	...	...	...	...	1	...	...	...	...	1	1	...	...	...	...	...	...	...	...	1	...	...
Cuyahoga Falls	2,614	3	13.83	1	...	1	...	...	1	...	...	...	...	...	...	...	...	...	2	...	1	1	...	...	...	...	...	...	...	...	1
Dayton	61,220	65	12.74	15	3	13	2	3	...	...	1	...	...	3	1	10	...	8	30	1	...	...	...	2	6	3	...	7	9	2	4
DeGraff	1,075	5	55.81	1	1	3	1	...	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...
Defiance	7,694	11	17 13	...	4	5	2	1	...	...	...	...	...	...	...	2	1	1	3	...	1	1	...	...	1	...	...	...	...	1	2
Delphos	4,516	3	7.97	...	...	2	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...	...
East Liverpool	10 956	10	10.95	1	1	4	1	...	...	...	1	...	1	...	...	2	1	1	3	...	...	...	...	...	1	...	...	2	...	1	...
Elmwood Place	1,980	7	42.42	1	...	1	1	...	...	...	...	...	...	...	...	2	1	1	3	...	...	...	...	...	1	...	...	2	...	1	...
Findlay	18,553	3	1 94	...	...	1	1	...	...	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...
Fostoria	7,070	7	10.46	1	2	5	4	...	...	...	...	...	...	...	...	2	2	...	...	...	...	...	...	...	...	...	...	...	...	...	2
Fremont	7,140	10	16.81		2	2	...	1	...	...	...	...	...	1	...	3	1	2	5	...	...	...	1	...	2	...	...	1	...	...	...
Gallipolis	4,498	11	29.67	1	...	4	2	...	...	...	...	...	...	...	...	2	...	2	3	...	1	...	...	1	1	...	...	...	2	2	...
Germantown	1,437	3	25 05	1	...	...	...	...	...	...	...	...	...	...	...	1	...	1	1	...	...	...	...	...	...	...	...	1	...	1	...
Glouster	1 213	6	59.35	...	2	6	4	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Greenville	5,473	7	15.17	...	...	3	2	...	1	...	...	...	...	...	...	...	...	...	3	...	...	...	...	1	1	...	...	...	...	1	...
Hicksville	2,141	4	11.21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	1	...	...	...	...	2	...	...	...	2	...	...

Hubbard	1,498	5	40.06		3	3	3												2		1							1			
Ironton	10,939	14	15.45		3	4	2						1			2	1	1	8		1		1			1		1			
Lancaster	7,555	11	17 48													2		2	8	1	1			3	3				1		
Leetonia	2,826	5	21.23		1	3	1		1										2						2						
Lima	15,981	7	5.25			2	1							1					4					2	1	1				1	
Logan	3,119	3	11.53													2		2											1		
Lorain	4,863	3	7.41	1															1									1	1	1	1
Mansfield	13,473	14	10.98	3	2	3										3	1	2	3				1						3		
Marion	8,327	17	24.48			12	7	1						4		1	1		3		2								1		
Martin's Ferry	6,250	6	11.52	3	1	1										1	1		3			1						2		1	2
McConnellsville	1,771	3	20.31	1		2		1							2				1						1						2
Middletown	7,681	21	32.82	2	2	13	9					1		2		1		1	7	1			2		1	2		1			
New Lisbon	2,278	6	31.58													3		3	1						1				1		
N. Straitsville	2,782	5	21.58		1	1	1									3		3	1												1
Oberlin	4,376	4	10.91													2	1	1	2					1	1						
Piqua	9,090	14	18.48	3		6	5												3		1					1			5		
Portsmouth	12,394	27	26.15	2	3	11	6				1		3	1		3		3	10		1			1	2			5	2	1	7
Ravenna	3 417	6	21 05	1		1										4	1	3	1	1											
Reading	3,103	5	19.31			1								1					3				2		1					1	1
Salem	5,780	11	22.84	4	2	8	5							2		1	1		1									1	1		1
Sandusky	18,471	9	5.36	3		1													5						2		1	1	2	1	
Shelby	1,977	3	18.18	1												1		1	2				1		1						
Sidney	4,850	11	27.21	1	2	6	6									1			3		1									1	
Springfield	31 895	36	13.54	6	5	7	2							2		8	1	7	13	1	2				2	1		1	4	2	2
Sylvania	545	3	66 05	3		3	2	1																							
Tiffin	10,801	14	15.54			3	3									3		3	8												3
Toledo	81,431	99	14 58	21	16	29	11	7		2	1		1	5		17	1	13	38		1	2	3	3	3	2		5	10	5	15
Troy	4 491	4	10.66		1	2	1		1							1		1	1						1						
Urbana	6 510	6	11.07		1	2	1									2	1	1	1	1									1		
Wadsworth	1,574	5	38.18			1								1		1	1		3	1	1			1							
Washington C. H.	5,742	5	10.54			2										1		1	2						1			1			
Wellston	4,377	5	13 71													2		2	1										1	1	3
West Liberty	1,318	3	27.31	1		1								1		1	1												1		
Wooster	5,901	7	14.43			2	1				1								3	2								1	2		
Wyoming	834	4	57.55	1												1		1	2									1	1		
Youngstown	33,220	35	12.64	9	9	15	5	2	1				1	5		2	1		9	1		2	1	2	1			1	15	1	7
Zanesville	21,009	26	14.81	5	3	3	1							1		5	1	4	14							1		2	2		2
Totals	1268 673	1,673	15.77	292	194	463	214	11	10	10	20	1	22	78	6	278	43	174	696	33	35	35	62	58	115	33	6	100	151	97	189

Ada reports one death from heart disease and one from consumption; Archbold 1 from diphtheria and 1 from typhoid fever; Ashley 1 from cancer; Bellevue 1 from consumption and 1 from violence; Elmore 1 from cerebro-spinal meningitis and from peritonitis; Garrettsville 1 from heart disease; Geneva 1 from inflammation of bowels and 1 from paralysis; Glendale 1 from developmental disease; Hudson 1 from dropsy; Kalida 1 from diphtheria and 1 from consumption; Mechanicsburg 1 from apoplexia and one still-birth; Mentor 1 from malarial fever and one from apoplexia; Milford 1 from consumption and 1 from violence; Millersburg 1 from cholera infantum and one from consumption; Nelsonville 1 from cholera infantum and 1 from convulsions; New London 1 from diphtheria; North Amherst 1 from heart disease and 1 from old age; Painesville 1 from heart disease and 1 from violence; Sabina 1 from rheumatism and 1 from convulsions; Summerfield 1 from heart disease and 1 from pleurisy; Tippecanoe City 1 from congestion of the brain and 1 from heart disease; Union City 1 from heart disease; Lockland 1 from cerebro-spinal meningitis.

The following places report no deaths: Arcanum, Caledonia, Cridersville, Fairport Harbor and Smithville.

SUMMARY OF MORTALITY REPORTS.

The total number of deaths reported from all causes—excluding premature and still-births—by the towns represented in the foregoing tables was 22,957. The average population of the cities and towns represented was 1,265,076, which is equal to an annual death rate of 18.14 per thousand living population represented.

The deaths in 1,244,800 living population in 1891 (November, 1890 to November, 1891) were 20,960, equal to an annual death rate of 16.88 per thousand; while in 1890 (November, 1889, to November, 1890), the total number of deaths reported in 1,212,727 population was 21,648, equal to a mortality rate of 17.85 per thousand.

The number of deaths reported each month was as follows:

January	2,315	July	2,136
February	1,946	August	1,924
March	2,041	September	1,700
April	1,833	October	1,673
May	1,639	November (1891)	1,720
June	1,542	December (1891)	2,498

The greatest number of deaths (2,488) was reported in December, the least number (1,542) in June.

DEATHS OF CHILDREN UNDER FIVE YEARS OF AGE.

The number of deaths reported of children under five years of age (premature and still-born excluded), was 7,137, which is equal to 31 per cent. of the deaths from all causes, and a death rate of 5.68 per thousand population represented. The death rate of children under five the preceding year was 5.32 per thousand population represented.

The deaths by months, of children under five, were as follows:

January	572	July	886
February	487	August	821
March	644	September	608
April	583	October	486
May	483	November (1891)	483
June	487	December (1891)	597

The greatest number of deaths reported in children under five (886) was in July; the least number (483) was in May and November.

ZYMOTIC DISEASES.

The total number of deaths reported from zymotic diseases was 4,929, which is equal to nearly 21 per cent. of the deaths reported from all causes, and an annual rate of 3.89 per thousand of the population represented.

The number of deaths reported the preceding year from zymotic diseases was 4,842, equal to a death rate of 3.9 per thousand population represented.

The number of deaths, reported from zymotic diseases each month was as follows:

January	337	July	656
February	363	August	684
March	350	September	512
April	202	October	463
May	260	November (1891)	411
June	265	December (1891)	426

The month having the greatest number reported (684) was August; the one having the least (202) was April.

CROUP AND DIPHTHERIA.

The total number of deaths reported from croup and diphtheria was 1,448, which is equal to 6.3 per cent. of the deaths reported from all causes, and a death rate of 1.14 per thousand of the population represented.

The number of deaths reported the preceding year from these causes was 1,224, equal to a mortality rate of .98 per thousand of the population represented.

The number of deaths reported each month from croup and diphtheria was as follows:

January	159	July	50
February	109	August	58
March	119	September	116
April	98	October	214
May	72	November (1891)	190
June	57	December (1891)	206

The month having the greatest number reported (214) was October; the one having the least number (50) was July.

CHOLERA INFANTUM, CHOLERA MORBUS AND DIARRHŒA.

The total number of deaths reported from cholera infantum and diarrhœa was 1,170, which is equal to nearly 5.1 per cent. of the deaths reported from all causes, and a mortality rate of .93 per thousand population represented.

The deaths, as reported by months, were as follows:

January	21	July	380
February	15	August	391
March	17	September	186
April	12	October	51
May	13	November (1891)	14
June	56	December (1891)	14

The month having the greatest number reported (391) was August; the one having the least (12) was April.

MEASLES, SCARLET FEVER AND WHOOPING COUGH.

The total number of deaths reported from measles, scarlet fever and whooping cough was 432, which is equal to 1.9 per cent. of the total number of deaths reported from all causes, and a mortality rate of .34 per thousand of the population represented.

The total number of deaths reported from these diseases during the preceding year was 342, equal to a mortality rate of .27 per thousand population represented.

The deaths, as reported by months, were as follows:

January	38	July	38
February	45	August	21
March	45	September	17
April	41	October	29
May	48	November (1891)	39
June	26	December (1891)	45

The month in which the greatest number of deaths were reported (48) was May; the least number (17) was reported in September.

TYPHOID FEVER.

The total number of deaths reported from typhoid fever was 611, which is equal to 2.6 per cent. of the total number reported from all causes, and a mortality rate of .48 per thousand population represented.

The number of deaths reported from this cause the preceding year was 691, equal to a mortality rate of .55 per thousand living population represented.

The number of deaths from typhoid fever, as reported by months, was as follows:

January	38	July	52
February	27	August	71
March	32	September	105
April	19	October	78
May	27	November (1891)	86
June	36	December (1891)	40

The greatest number of deaths (105) was reported in September; least number (19) in April.

CONSTITUTIONAL DISEASES.

The total number of deaths reported from constitutional diseases was 3,722, which is equal to 16 per cent. of the deaths reported from all causes, and a mortality rate of 2.81 per thousand population represented.

The number of deaths reported from constitutional diseases the preceding year was 3,576, equal to a mortality rate of 2.80 per thousand population represented.

The number of deaths as reported by months was as follows:

January	321	July	333
February	324	August	285
March	322	September	266
April	354	October	278
May	323	November (1891)	285
June	289	December (1891)	342

The greatest number of deaths (354) was reported in April; the least number (266) was reported in September.

CANCER.

The total number of deaths reported from cancer was 577, which is equal to 2.5 per cent. of the deaths reported from all causes, and a mortality rate of .45 per thousand population represented.

The deaths as reported by months were as follows:

January	56	July	56
February	46	August	50
March	47	September	54
April	35	October	43
May	49	November (1891)	52
June	49	December (1891)	40

The months having the greatest number reported were January and July (56); the month having the least (35) was April.

CONSUMPTION.

The total number of deaths reported from consumption was 2,428, which is equal to 10.5 per cent. of the deaths reported from all causes, and a mortality rate of 1.81 per thousand population represented.

The number of deaths reported from this cause the preceding year was 2,402, equal to a mortality rate of 1.9 per thousand population represented.

The number of deaths as reported each month was as follows:

January	217	July	192
February	215	August	170
March	231	September	153
April	254	October	174
May	211	November (1891)	189
June	186	December (1891)	236

The greatest number of deaths was reported in April (254); the least number (153) in September.

LOCAL DISEASES.

The total number of deaths reported from local diseases was 10,178, which is equal to 44 per cent. of the deaths reported from all causes, and a mortality rate of 8.04 per thousand population represented.

The number of deaths reported from local diseases the preceding year was 9,397, equal to a mortality rate of 7.5 per thousand population represented.

The deaths, reported by months, were as follows:

January	1,130	July	816
February	834	August	652
March	1,059	September	597
April	944	October	696
May	839	November (1891)	676
June	708	December (1891)	1,227

The month having the greatest number of deaths reported (1,227) was December; the one having the least number (597) was September.

BRONCHITIS, PLEURISY AND PNEUMONIA.

The total number of deaths reported from bronchitis, pluerisy and pneumonia was 3,083, which is equal to 13 per cent. of the deaths reported from all causes, and a mortality rate of 2.4 per thousand of the population represented.

In the preceding year there were 2,809 deaths reported from these causes, equal to a mortality rate of 2.2 per thousand population represented.

The deaths, as reported by months, were as follows:

January	546	July	102
February	339	August	81
March	354	September	97
April	265	October	141
May	245	November (1891)	239
June	129	December (1891)	545

The month in which the greatest number of deaths was reported was December (545); the least number (81) was reported in August.

CONVULSIONS AND MENINGITIS.

The total number of deaths reported from convulsions and meningitis was 1,604, which is equal to 6.9 per cent. of the deaths reported from all causes, and a mortality rate of 1.18 per thousand population represented.

The number of deaths reported from these diseases the preceding year was 1,675, equal to a mortality rate of 1.34 per thousand population represented.

The deaths, as reported by months, were as follows:

January	144	July	153
February	135	August	139
March	189	September	97
April	177	October	95
May	113	November (1891)	70
June	150	December (1891)	142

The greatest number of deaths was reported in March (189); the least number (70) in November.

DEVELOPMENTAL DISEASES.

The total number of deaths from developmental diseases reported (excluding premature and still-births) was 1890, which is equal to 8.3 per cent. of the deaths reported from all causes, and a mortality rate of 1.49 per thousand population represented. During the preceding year there were 1,946 deaths reported from developmental diseases, equal to a mortality rate of 1.56 per thousand population represented.

The deaths, as reported by months, were as follows:

January	138	July	175
February	200	August	153
March	184	September	175
April	134	October	151
May	122	November (1891)	126
June	143	December (1891)	192

The greatest number of deaths (200) was reported in February; the least number (122) in May.

PREMATURE AND STILL-BIRTHS.

The total number of premature and still-births reported was 1,912, which is equal to 8.4 per cent. of the deaths reported from all causes, and a rate of 1.51 per thousand population represented.

During the preceding year there were 1,680 premature and still-births reported, equal to a rate of 1.34 per thousand population represented.

The premature and still-births, as reported by months, were as follows:

January	153	July	157
February	140	August	196
March	152	September	159
April	176	October	189
May	131	November (1891)	153
June	152	December (1891)	154

The greatest number (196) was reported in August; the least number (131) was in May.

VIOLENCE.

The total number of deaths reported from violence was 1,165, which is equal to 5 per cent. of the deaths reported from all causes, and a mortality rate of .81 per thousand population represented.

During the preceding year there were 1,132 deaths reported from violence, equal to a mortality rate of .91 per thousand population represented.

The deaths, as reported by months, were as follows:

January	57	July	120
February	57	August	110
March	100	September	106
April	93	October	97
May	82	November (1891)	104
June	129	December (1891)	110

The greatest number of deaths was reported in June (129) the least number (82) in May.

LIST OF LOCAL BOARDS OF HEALTH AND HEALTH OFFICERS, SEPTEMBER 24, 1893.

Aberdeen	T. Heaton, M. D.
Ada	W. H. Morrow.
Adamville	S. R. Hosick, M. D.
Addison	Hudson Maddy.
Addystown	J. M. Diller, M. D.
Akron	A. A. Kohler, M. D.
Alexandria	D. H. Miller, M. D.
Alliance	P. W. Welker, M. D.
Alvordtown	Isaac Shaeffer.
Amelia	W. B. Doan, M. D.
Ansonia	H. A. Snorf, M. D.
Antwerp	Charles Roberts.
Arcadia	J. E. Bowman.
Arcanum	D. J. Robbins.
Archbold	Henry Dimke.
Arlington	B. S. Crawford.
Arlington Heights	J. H. Francis.
Ashland	B. Myers, M. D.
Ashley	Sam R. Harris.
Ashtabula	A. W. Hopkins, M. D.
Ashville	J. W. Johnson.
Athens	W. N. Alderman, M. D.
Attica	A. W. Knight, M. D.
Avondale, Hamilton Co	Jos. A. Brown.
Bainbridge	L. F. House, M. D.
Baltimore	B. K. Thomen, M. D.
Barberton	T. Elliott Tait, M. D.
Barnhill	R. A. Douglas, M. D.
Barnesville	D. D. Laws, M. D.
Batavia	
Beallsville	John W. Reed, M. D.
Beaver Dam	C. H. Thomas, M. D.
Bedford	L. J. Gordon.
Bellaire	D. W. Long, M. D.
Bellbrook	J. L. Sebring.
Belle Center	J. F. Dennis.
Bellefontaine	H. C. Rutter, M. D.
Belleville	E. Stofer, M. D.
Bellevue	John Earls.
Belmont	W. C. Hedges.
Berea	T. G. Card.
Berlin Heights	
Bethel	W. W. Smith, M. D.
Bettsville	H. M. Buckingham, M. D.
Beverly	F. A. Pomery.
Blakes' Mills	Chas. Shoop.

Blanchester	S. B. Judkins, M. D.
Bloomdale	E. Wineland.
Bloomingburg	J. J. Pinkerton.
Bloomville	T. J. Foster, M. D.
Bluffton	F. J. Baldwin.
Bolivar	
Bond Hill	G. Perin.
Bowerston	E. E. McPeck, M. D.
Bowling Green	A. Ordway.
Bradford	H. M. Forman, M. D.
Bridgeport	Jno. W. Cooke, M. D.
Brookfield	W. E. Dunford.
Brooklyn	R. E. Stickney.
Brookville	A. C. Berst.
Bryan	S. T. Martin.
Bucyrus	C. H. Noblet, M. D.
Burbank	M. H. Dodds.
Butler	J. M. McLaughlin, M. D.
Butlerville	D. A. Chapman.
Byesville	Thomas Barnett.
Cadiz	M. J. Lyons, M. D.
Caledonia	Preston Smith.
Caldwell	O. O. McKee, M. D.
Cambridge	H. H. Veitch.
Camden	C. C. Jones, M. D.
Canal Dover	E. Amick.
Canal Fulton	S. M. Buckmaster.
Canal Winchester	L. W. Beery, M. D.
Canfield	A. D. Woods.
Canton	S. B. Post, M. D.
Cardington	S. C. Bennett.
Carey	J. D. Southward, M. D.
Carroll	H. A. Brown, M. D.
Carrollton	C. R. Zeigler, M. D.
Carthage	Harry Ross.
Catawba	M. R. Huster, M. D.
Cecil	G. L. Weaver.
Cedarville	Gregory Warwelt.
Celina	L. P. Lisle, M. D.
Centerburg	W. B. Merriman, M. D.
Chagrin Falls	J. H. Isaacs.
Chardon	
Chester Hill	W. M. Barnes, M. D.
Chicago	D. H. Young, M. D.
Chillicothe	A. P. Cole, M. D.
Cincinnati	J. W. Pendergast, M. D.
Circleville	S. B. Evans.
Clarksville	Z. T. Garland, M. D.
Clarington	Jno. E. Morrell.
Cleveland	Geo. F. Leick, M. D.
Cleves	W. C. Hughes, M. D.
Clifton, Greene Co.	D. E. Spahr, M. D.
Clifton, Hamilton Co.	Wm. H. Bell, M. D.
Clyde	Alex. Harnden.

Coalton	W. D. Hippell.
College Hill	E. F. Smith.
Collinwood	A. L. Waltz, M. D.
Columbiana	Geo. Roninger.
Columbus	D. N. Kinsman, M. D.
Columbus Grove	W. H. Begg, M. D.
Conneaut	E. D. Merriam, M. D.
Continental	S. N. Aller, M. D.
Convoy	R. L. Crooks, M. D.
Coolville	A. M. Frame, M. D.
Copley	O. E. Arnold.
Corning	G. W. Delong, M. D.
Coshocton	Isaac Hagan.
Covington	S. C. Sisson.
Crestline	A. J. Cover.
Cridersville	Jas. P. Church.
Cumberland	Geo. P. McEndree.
Custer	M. Worline.
Cuyahoga Falls	I. N. Reed.
Cygnet	A L. Mercer, M. D.
Dalton	A. C. Stuck.
Danville	C. R. Bradfield, M. D.
Dayton	A. H. Iddings, M. D.
Deersville	Frank James, M. D.
Defiance	P. H. Aldrich, M. D.
DeGraff	W. H. Hinkle, M. D.
Delaware	W. B. Hedges, M. D.
Delhi	M. L. Andrews.
Dell Roy	Isaac Yant, M. D.
Delphos	J. M. Marsh, M. D.
Delta	S. T. Worden, M. D.
Dennison	S. L. McCurdy, M. D.
Deshler	T. M. Gehrett, M. D.
Diamond	
Donnelsville	Adam Cornwell.
Doylestown	A. E. Stepfield, M. D.
Dresden	Frank Comer.
Dunkirk	C. C. McLaughlin, M. D.
Dupont	Isaac Staley.
East Fairfield	G. H. Albright, M. D.
East Liverpool	J. T. King.
East Palestine	H. A. Gray.
East Springfield	Geo. R. Wycoff, M. D.
Eaton	O. H. Jefferson.
Eldorado	B. F. Beane, M. D.
Edgerton	C. Hathaway.
Edon	R. H. Chisholm.
Elida	Wm. Roush, M. D.
Elmore	S. T. Dromgold.
Elmwood Place	Jno. H. Bart.
Enon	Elwood Miller, M. D.
Elyria	W. F. McLean, M. D.
Fairfield	D. E. Knisely.
Fairport	D. A. Lewis.

Farmersville	Geo. W. Neushawg.
Fayette	E. J. Emerick.
Felicity	C. E. Houghton.
Findlay	J. T. Thorney.
Fitchville	S. N. Curtis.
Fletcher	J. Funderburg, M. D.
Flushing	J. V. Webster, M. D.
Forest	W. N. Mundy, M. D.
Fort Recovery	Jno. Watkins.
Fostoria	J. O. Hess.
Frankfort	J. O. Hoffline, M. D.
Franklin	D. A. Williams.
Frazeysburg	D. V. Randall.
Fredericktown	Jno. T. Cornell.
Fredericksburg	L. C. Miller.
Freeport	
Fremont	J. D. Bemis, M. D.
Ft. Jennings	J. F. George, M. D.
Gahanna	J. Clinch, M. D.
Galion	C F. Eise.
Gallipolis	E. Westlake, M. D.
Gambier	E. J. Hyatt, M. D.
Garretsville	C. A. Snow, M. D.
Geneva	F. E. Tibbitts.
Genoa	J. L. Trutton, M. D.
Georgetown	
Germantown	Wm. Shaeffer.
Gibsonburg	A. E. Ferguson.
Gilboa	M. A. Darbyshire, M. D.
Girard	A. J. Brooks, M. D.
Glandorf	Jacob Meyerhofer.
Glendale	E. A. Sayre.
Glenville	Chas. B. Cook.
Grafton	John Isley.
Green Camp	F. W. Moses, M. D.
Glouster	J. M. Rhodes, M. D.
Good Hope	J. D. C. Somers.
Granville	Jno. Watkin, M. D.
Grand Rapids	William Mailey.
Gratis	H. Bowman.
Greenfield	Scott Powell.
Greenville	A. W. Rush, M. D.
Greenwich	Robt. Reynolds, M. D.
Grove City	Chas. McGiven, M. D.
Groveport	C. R. Clement, M. D.
Grover Hill	J. J. Worley, M. D.
Hamden	J. T. Barrett.
Hamilton	C. N. Huston, M. D.
Hamler	W. M. Barhite.
Hanging Rock	Joseph Kinkaid.
Harmar	Jno. W. Knox.
Harrisburg	C. H. Copeland.
Harrison	Thomas Bowles.
Harrisville	O. H. Colvill, M. D.

Hartwell	C. W. Tufts, M. D.
Harveysburg	J. E. Witham, M. D.
Herring	J. B. McWilliams, M. D.
Hicksville	S. Blodget.
Higginsport	J. H. Williamson, M. D.
Hilliards	N. P. Davidson, M. D.
Hillsboro	H. M. Brown.
Hollansburg	G. W. Harley, M. D.
Holgate	Jno. Miller, M. D.
Holmesville	R. P. Loller, M. D.
Home City	L. B. Terrell, M. D.
Hubbard	W. S. Bond, M. D.
Hudson	L. D. Osborne, M. D.
Hopedale	L. A. Crawford, M. D.
Huntsville	F. A. Richardson, M. D.
Huron	J. H. Calvin, M. D.
Ironton	N. K. Moxley, Jr., M. D.
Jackson	Sam'l Stevenson, M. D.
Jacksonville	W. W. Wolfe, M. D.
Jamestown	F. W. Ogan, M. D.
Jefferson	A. L. Arner, M. D.
Jeffersonville	C. A. Teeters, M. D.
Jewett	J. R. Roberts.
Johnsonville	E. C. Hitchcock.
Johnstown	J. D. Thompson, M. D.
Junction City	P. A. Gordon, M. D.
Kalida	Jefferson Ladd.
Kent	P. B. Mead.
Kenton	J. W. Binkley, M. D.
Kingston	C. B. James, M. D.
LaGrange	G. N. Snyder, M. D.
Lancaster	J. P. Hershberger, M. D.
Larue	M. V. Toner.
Latty	J. H. Horford, M. D.
Lebanon	F. H. Frost, M. D.
Leesburg	H. A. Beeson, M. D.
Leetonia	S. R. McCready, M. D.
Leipsic	Jno. McClung, M. D.
Lexington	J. P. Stober, M. D.
Liberty Center	D. K. Bowker, M. D.
Lima	L. J. Stueber, M. D.
Linwood	W. S. Reynolds, M. D.
Lockland	J. B. King, M. D.
Lodi	A. O. Mead.
Logan	I. C. Wright, M. D.
London	C. E. Gain, M. D.
Lorain	S. S. Cox, M. D.
Loramies	Thos. Walkup, M. D.
Louisville	J. H. Rogers, M. D.
Loveland	Wm. Scott, M. D.
Lowell	C. H. Harris, M. D.
Lowellville	W. S. Baker.
Ludlow Grove	S. B. Howard, M D.
Lynchburg	Jerry Archer.

Macksburg	R. C. Smithson.
Madison	A. H. Stockham, M. D.
Madisonville	E. A. Flinn, M. D.
Magnetic Springs	C. L. Schwartz, M. D.
Malta	Norman McAskill.
Malvern	E. C. Ross, M. D.
Manchester	R. A. Stephenson, M. D.
Mansfield	R. Harvey Reed, M. D.
Marietta	C. W. Eddy, M. D.
Marion	M. R. Swisher.
Marice City	S. H. Bretz.
Marseilles	C. H. Bower.
Mantua Station	
Martin's Ferry	W. H. Hildebrand.
Marengo	J. W. Pratt, M. D.
Marysville	A. B. Swisher, M. D.
Martinsville	W. K. Ruble, M. D.
Marblehead	A. B. Jorden, M. D.
Mason	C. T. Hall, M. D.
Massillon	T. Clarke Miller, M. D.
Maumee City	G. W. Rhonehouse, M. D.
McArthur	G. M. Swepston, M. D.
McClure	J. W. Sharp, M. D.
McComb	Jno. A. Thompson, M. D.
McConnelsville	J. D. Maris, M. D.
Mechanicsburg	O. A. Nincehelser, M. D.
Mechanicstown	J. M. Watt, M. D.
Medina	E. E. Standen.
Melrose	R. E. Kingeery.
Mendon	J. M. Miller, M. D.
Mentor	J. W. Lowe, M. D.
Miamisburg	W. S. Bookwalter, M. D.
Middleport	J. H. Pake, M. D.
Middletown	G. D. Lummis, M. D.
Milan	Richard Rawl.
Milford	F. C. Curry, M. D.
Milford Center	J. H. Weiser, M. D.
Millersburg	J. E. Whitmar, M. D.
Milton	J. F. Noble, M. D.
Miltonsburg	J. H. Pugh, M. D.
Mineral Ridge	Jno. C. Jones.
Minersville	
Minerva	Thos. J. Rouch.
Mingo Junction	F. S. Buchanan.
Minster	R. A. Rulman, M. D.
Monroeville	E. R. Kreider, M. D.
Montgomery	
Montpelier	H, W. Wertz, M. D.
Moscow	J. R. Wiley.
Morristown	R. S. Hazlett.
Morrow	J. W. Shockey, M. D.
Mt. Blanchard	J. Odenbaugh, M. D.
Mt. Cory	W. E. Clymer, M. D.
Mt. Gilead	Oswell Busby.

Mt. Orab	J. A. Cumberland.
Mt. Pleasant	J. A. McGlenn, M. D.
Mt. Sterling	E. F. Collins, M. D.
Mt. Vernon	Geo. B. Bunn.
Mt. Victory	L. T. Mahon, M. D.
Mt. Washington	J. W. Dodds, M. D.
Murray City	T. J. Dillenger, M. D.
Mutual	C. M. Goul.
Napoleon	L. V. Betson.
Nashport	H. L. Curtis.
Nashville	J. A. Underwood.
Navarre	John Bailiss.
Nelsonville	Chas. W. Cable, M. D.
Nevada	G. F. Cole, M. D.
New Albany	I. N. Smith, M. D.
Newark	W. C. Rank, M. D.
New Athens	Albert Dickerson, M. D.
New Bremen	M. S. Eckermyer, M. D.
New Carlisle	Ben Davis, M. D.
New Comerstown	J. R. McElroy, M. D.
New Concord	L. J. Graham.
New Lebanon	Sam'l Bowman.
New Lexington	J. B. Parter.
New Lisbon	R. G. Eells.
New London	W. B. Newkirk.
New Matamoras	W. L. West, M. D.
New Madison	E. A. Hecker, M. D.
New Paris	I. S. Robinson, M. D.
New Philadelphia	J. T. Maclean, M. D.
New Richmond	T. J. Mullen, M. D.
New Reigel	Jno. Moes, Jr.
New Straitsville	C. B. Powell.
Newton Falls	C. M. Rice, M. D.
New Vienna	R. T. Trimble, M. D.
New Washington	J. F. Kimerline.
Niles	F. Casper, M. D.
North Amherst	N. H. Cornwell, M. D.
North Baltimore	J. E. Somers, M. D.
North Lewisburg	A. Spain.
Norwalk	Edgar Martin, M. D.
Norwood	Chas. W. Tidball, M. D.
Oak Harbor	F. S. Heller, M. D.
Oak Hill	W. W. Morgan.
Oakwood	J. L. Stover.
Oakley	
Oberlin	E. L. Burge.
Ohio City	E. E. Smith.
Olmstead	H. B. Northrop.
Orrville	H. Blankenhorn, M. D.
Ostrander	G. E. Cowles, M. D.
Osgood	J. W. Sprague.
Osborne	R. O. Hoover, M. D.
Osnaburg	Joshua Whiteleather, M. D.
Otway	Alfred Jones.

Ottawa	C. G. Tupper, M. D.
Ottoville	A. Binder, M. D.
Oxford	E. L. Hiel, M. D.
Painesville	D. J. Merriman, M. D.
Pataskala	James Lisle, M. D.
Patterson	Jno. C. Gardner.
Paulding	P. A. Dix, M. D.
Payne	J. D. McHenry. M. D.
Peninsula	W. N. Boe stler, M. D.
Pemberville	E. B. Morse.
Peebles	Jas. W. Yankie.
Perrysburg	J. H. Rheinfrank, M. D.
Perrysville	S. N. Alban, M. D.
Pioneer	W. H. Durbin.
Piqua	Will J. Prince, M. D.
Plain City	M. J. Jenkins, M. D.
Plainfield	J. S. Jenkins.
Pleasant Hill	S. W. Bausman, M. D.
Pleasant Ridge	J. J. Marvin, M. D.
Plymouth	J. M. Fackler, M. D.
Poland	C. R. Justice, M. D.
Pomeroy	R. E. Stobart.
Prospect	C. M. C. Thomas, M. D.
Port Clinton	Thos. J. Marshall.
Port Jefferson	S. S. Crumbaugh, M. D.
Portsmouth	C. L. Hudgins, M. D.
Port William	S. L. Thorpe.
Proctorville	Amos Ripley.
Quaker City	F. S. Miskimen, M. D.
Quincy	
Rarden	R. A. Foster, M. D.
Ravenna	Joseph Gledhill.
Rawson	Lewis Henning.
Reading	Henry Wackendorf.
Rendville	J. S. Sessims, M. D.
Rising Sun	Martin Shively.
Richmond	James Averille.
Richwood	Jno. Cunningham.
Ridgeway	E. B. Crow, M. D.
Richmond, Jefferson county	Samuel Rothacker, M. D.
Riverside	H. C. Robinson.
Rockford	T. G. McDonald, M. D.
Rock Creek	W. S. Weiss, M. D.
Roseville	W. A. Meluck, M. D.
St. Clairsville	D. L. Walker, M. D.
St. Marys	W. B. Shoonover, M. D.
St. Paris	C. A. Offenbacher, M. D.
Sabina	Jared L. Johnson.
Salem	Paul E. Barckhoff, M. D.
Salesville	J. L. Clark.
Salineville	Ralph Marsh.
Sandusky	Elwood Stanley, M. D.
Savannah	L. S. Cowie.
Scio	M. E. McAdoo.

Sedalia	E. B. Mead, M. D.
Seville	P. E. Beach, M. D.
Scott	D. M. Berry.
Senecaville	W. Scott, M. D.
Sharon	
Shawnee	H. E. White, M. D.
Shelby	D. V. Summers, M. D.
Sherodsville	Wm. H. Watkins.
Sherwood	E. J. Potter, M. D.
Shiloh	L. F. Henry, M. D.
Shreve	
Sidney	Edwin LeFevre, M. D.
Smithfield	Wm. H. Wood, M. D.
Smithville	I. A. Elson, M. D.
Somerford	
South Point	James Black, M. D.
Somerset	W. W. Fulkerson.
South Charleston	Thos. G. Farr, M. D.
Sparta	S. G. Fowls.
Spencerville	J. C. Pence, M. D.
Springfield	Henry H. Seys, M. D.
Spring Valley	S. E. Dyke, M. D.
Springboro	C. C. Langsden.
Strasburg	J. C. Schatzbach, M. D.
Steubenville	J. Buchanan.
Sugar Grove	T. R. Mason, M. D.
Stouts P. O	S B. Grimes, M. D.
Summerfield	F. Rhodecker.
Sunbury	G. H. Gerhardt, M. D.
Swanton	A. B. Lathrop, M. D.
Sycamore	R. S. Galleher.
Sylvania	Geo. A. Crandall.
Thornville	Geo. H. Pugh, M. D.
Tiffin	J. Bridinger, M. D.
Tippecanoe City	H. A. Hawver.
Toledo	J. T. Woods, M. D.
Tontogany	A. Eddmonn, M. D.
Toronto	J. W. Collins, M. D.
Trimble	H. D. Danford.
Troy	T. M. Wright, M. D
Uhrichsville	J. E. Groves, M. D.
Union City	W. M. Grimes, M. D.
Upper Sandusky	O. C. Stutz, M. D.
Urbana	H. C. Houston, M. D.
Utica	H. C. Dicus, M. D.
Vandalia	W. H. Riley, M. D.
Van Wert	E. W. Wilkinson, M. D.
Vermillion	Albert Matteson.
Versailles	W. H. Rike, M. D.
Vinton	Robt. B. Carter.
Wadsworth	C. N. Lyman, M. D.
Waldo	J. R. Hipple, M. D.
Wapakoneta	John B. Mouch.
Warren	T. B. Webb.

Warsaw	S. W. Willis.
Washington C. H	J. M. Edwards.
Washingtonville	J. C. Gorsuch, M. D.
Waterville	Sam'l Downs, M. D.
Wauseon	J. H. Waddell, M. D.
Waverly	Geo. D. Emmitt.
Waynesburg	E. G. McCormick, M. D.
Waynesfield	W. S. Turner, M. D.
Waynesville	W. E. Oglesbee, M. D.
Wellington	J. J. Thomas.
Wellston	J. B. Palmer.
Wellsville	J. F. Davidson.
Westerville	Jas. D. Budd.
West Alexandria	L. J. Ashworth.
West Jefferson	W. E. Postle, M. D.
West Cleveland	G. A. Ehret, M. D.
West Elkton	Elwood Holaday, M. D.
West Liberty	Ben. S. Leonard, M. D.
West Manchester	A. B. Steinmetz.
West Milton	W. H. Kessler, M. D.
West Salem	D. W. Carver, M. D.
Weston	G. B. Spencer, M. D.
West Union	W. R. Coleman, M. D.
West Unity	J. H. Tiddler.
White House	F. M. Heath, M. D.
Wilkesville	J. A. Ewing, M. D.
Wilimington	G. M. Austin.
Williamsburg	F. M. Wardlow, M. D.
Williamsport	G. O. Hayes, M. D.
Willoughby	E. G. Clark, M. D.
Willshire	J. K. Ross, M. D.
Windham	H. A. Wadsworth.
Winchester	C. W. Salisbury, M. D.
Winton Place	Jacob Vorhiss.
Wood-field	C. C. Hall, M. D.
Woodville	Henry Busch.
Woodstock	D. P. Smith.
Wooster	J. E. Barrett, M. D.
Worthington	S. W. Beall, M. D.
Wyoming	A. M. Van Dyke.
Xenia	L. H. Brundage, M. D.
Yellow Springs	W. M. Haffner, M. D.
York	
Youngstown	H. E. Welch, M. D.
Zaleski	F. M. Smallwood, M. D.
Zanesville	H. T. Sutton, M. D.

APPENDIX I.

PROCEEDINGS OF A MEETING

OF THE

State Board of Health

AND

LOCAL BOARDS OF HEALTH OF OHIO,

HELD IN

COLUMBUS, OHIO,

JANUARY 28th and 29th, 1892.

PROCEEDINGS OF A MEETING OF THE OHIO STATE AND LOCAL BOARDS OF HEALTH,

– HELD IN –

COLUMBUS, OHIO, JANUARY 28th AND 29th, 1892.

The Convention was called to order by Dr. Probst, Secretary of the State Board of Health, who said:

Gentlemen, Dr. Sharp, the President of the Board, has been delayed in some manner, and as the time is now a little past the hour for the opening of the meeting, Dr. Hoover, of our board, will preside in the absence of Dr. Sharp.

Dr. Hoover—Gentlemen, I did not expect this honor. I had the pleasure and honor of presiding at a similar meeting about a year ago, and I shall simply state to you that the object of this meeting is the same as was that—for the purpose of drawing together the health officers of the State, and having a consultation about sanitary matters that would be of benefit to your people, and facilitate your work.

It is to be regretted that Dr. Miller is detained at home on account of the illness of his wife, so we will have to pass the first paper on the programme. It is hoped that each one of these papers will elicit more or less discussion, and it would be well to fix the time that will be permitted to each paper, so that no one may consume all of the time, but all shall have an opportunity to participate.

Dr. Conklin—Mr. Chairman, I move that we limit the time for each speaker to five minutes, and that no one be allowed to speak the second time until all who desire have spoken.

The motion being seconded, was carried.

The Chair—The Secretary asks me to invite all of you to register. We desire to keep a list of all those who attend the meetings, and we have a book here for this purpose, and hope that none of you will forget to register before leaving the room.

Now, if there are no other preliminary arrangements, we will call for the second number on the programme, a paper entitled:

IS IT NECESSARY OR PRACTICAL TO QUARANTINE ADULT MEMBERS OF FAMILIES IN WHICH THERE ARE CASES OF DIPHTHERIA?

By W. L. BUECHNER, M. D., Health Officer, Youngstown, Ohio.

At the tenth International Medical Congress, in the section for hygiene two excellent papers were presented by Roux, of Paris, and Loeffler, of Greiswalde, on the subject: "What measures should be adopted to prevent the spread of diphtheria?" Roux says the practical conclusions which should be drawn from his paper are:

1. To prevent the spread of diphtheria, the disease should be recognized as soon as possible. Bacteriological investigation can therefore not be too strongly recommended.

2. The virus of diphtheria may remain active in the mouth a long time after the disease is cured, and such patients should therefore not be permitted to return to their daily avocations until we are convinced that they are no longer carriers of the bacillus.

3. The virus of diphtheria remains active for a long time in a dry state, particularly if deprived of light, and it is therefore necessary to disinfect all linens, coverings, etc., with boiling water or to pass them through a dry heat before they are sent to a laundry. The rooms of diphtheria patients and vehicles in which they have been carried should also be disinfected. The parents who visit their children in diphtheria hospitals, frequently carry the germs of the disease to their families. Such visits should therefore be made as seldom as possible, and before being permitted to enter the wards they should change their clothing, and should do so again on leaving. They should also be compelled to disinfect their faces and hands. The throats of school children should be frequently examined, particularly if a case of diphtheria should have appeared among them. In affections of the throat of children, especially when rubeola or scarlatina is prevailing, antiseptic washes of mouth and pharynx should be used from the beginning.

Loeffler draws the following conclusions from his paper:

1. The cause of diphtheria is a specific bacillus. It is found in the excreta of the diseased mucus membranes.

2. With these excreta the bacillus is carried outward and may become deposited on everything that is in the neighborhood of the patient.

3. The patients harbor bacilli, capable of infecting, as long as there is the least trace of deposit in the throat, as also for several days after the disappearance of any deposit.

4. Diphtheria patients should be strictly isolated as long as any bacilli are found, and children should therefore be kept from attending school at least four weeks after recovery.

5. Diphtheria bacilli are active in a dry state for four or five months. Everything that comes in contact with the patient, such as linens, beddings, curtains, clothing of nurses, drinking cups, dishes, etc., should be carefully disinfected with boiling water or steam. The rooms should also be disinfected, the floor should be scrubbed with a warm sublimate solution (1-1000,) the walls and furniture should be thoroughly rubbed with bread.

6. The investigations, as to how long diphtheria bacilli remain active, in a damp state, are not concluded; but it is probable that they remain active longer when preserved in a damp state than in a dry one. Damp, dark domiciles seem to be very capable of preserving the activity of diphtheria virus. Such localities should be put in the best sanitary condition, they should be dried out thoroughly and plenty of light and air admitted. If a family moves from an infected house, the greatest care should be taken to have the premises disinfected.

7. Diphtheria bacilli grow outside of the body at a temperature of 20° C. They grow very well in milk. The sale of milk should therefore be watched, and no milk coming from places where diphtheria is existing should be sold.

8. The diphtheria-like diseases of animals, such as pigeons, chickens, calves and hogs are not caused by the bacillus which causes diphtheria in man, and are therefore not to be dreaded as causes of diphtheria in man.

9. Klein claims the identity of a disease of cats, observed by him, with diphtheria in man, but his observations are not yet proven, and need further corroboration.

10. Abrasions of the mucous membranes are very favorable for the deposit of diphtheria virus, but susceptible individuals may be taken down without such abrasions.

11. In times when diphtheria is prevalent, particular care should be taken to keep the mouth, nose and pharynx of children clean, and therefore mouth washes and gargles of aromatic waters or weak solutions of sublimate (1-10,000) are to be recommended.

12. The influence of meteorological factors, favoring the spread of diphtheria, is so far not proven.

Roux says: "'Till within a few years we were ignorant of the cause of diphtheria. Messrs. Klebs and Loeffler have shown beyond a doubt that its cause is a specific bacillus. Formerly we depended on clinical signs to diagnosticate the disease, but neither the appearance, nor the place, nor the presence of false membranes, nor the swelling of ganglia are certain signs. Moderate and benign cases are often overlooked, the necessary precautions are therefore not taken, and the disease is thereby frequently spread. The precise diagnosis of diphtheria depends on the finding of the specific bacillus by the microscope and its culture on serum."

Eighty children admitted to hospital, as suffering with diphtheria, were examined by Roux. In 61 the specific bacillus was found; 30 died, 31 recovered. The other 19 he declared not suffering with diphtheria, although they showed the clinical signs of the disease. They all recovered and their general condition was much better than that of the patients where the bacillus was found.

The advice of Roux, to determine as soon as possible, if the specific bacillus is present or not, is very good, but in the majority of cases impraticable. The busy general practitioner has not the time to do it, and if he had, there are few who are experts enough in microscopy and bacteriology, to make a satisfactory examination. We have yet, undoubtedly, to a great extent, to diagnosticate the disease from clinical signs.

The means, recommended by Roux and Loeffler, to prevent the spread of diphtheria, are not effective enough to do much good. The immediate removal of the patient to a hospital, or where this cannot be done, the strict quarantining of the whole family, children and adults, are in my opinion the only successful measures to stamp out the disease. The community will of course object to either of them, for it is a well known fact that a large number of people are ignorant about sanitary and hygienic matters, and are not willing to spend any money, or undergo any individual inconveniences for the sake of improving their sanitary condition, and lessen sickness and death among them. Where the welfare of the community is at stake, individual hardships should not be considered, and the cry of violation of individual rights should not be heeded. I well remember the opposition which was first met in quarantining small-pox. By enforcing it, the community has seen its good results, and now submit to it gracefully. Why should diphtheria not be as strictly quarantined as small-pox? Is it less contagious? Is it less fatal? Certainly not. I admit that it is difficult to carry out strict quarantine, where the patients are left at their homes, but a health officer who, as Dr. Lindsay says, is not afraid to be cursed and sworn at daily by his profane neighbors, can, with the aid of the proper authorities accomplish it easily enough.

Whenever a case of diphtheria is reported, a card should be immediately put up, and ingress and egress from the house strictly forbidden. A sanitary policeman should daily look after the wants of the quarantined family, and provide them with the necessary food, medicines and other things that may be needed, without coming in contact with any of the inmates of the house. Of the effectiveness of such a proceeding I can speak from personal experience. In October forty-two cases of diphtheria were reported to me. I then ordered strict quarantine, and had to make several arrests to enfore i . In November only eighteen cases were reported; in December seven, and in January three. The better class of our population fully indorse my vigorous steps for the suppression of contagious diseases, and when such measures can be enforced in a city of 33,000 inhabitants, I see no good reason why it could not as effectually be done in smaller and larger cities.

In conclusion, I would recommend to our cities the adoption of the plan of disinfection carried on in the city of Berlin. A brick building, consisting of two rooms, with a metallic box or sterilizing oven between them is used. All infected material, such as linens, beddings, mattresses, clothing, towels, handkerchiefs, etc., are hauled to this building in a metallic air tight van; the vehicle is driven into one of the rooms, the infected material is placed in the metallic box and steam applied to it. After the steaming process is ended, hot air is forced through the box, drying the damp material very rapidly, which is then taken out in the room on the other side of the box and taken back to the house, which in the meantime has been thoroughly disinfected by agents of the board of health.

The Chair—I see that our President, Dr. Sharp, has arrived, and I am very glad to turn the chair over to him.

President Sharp—Gentlemen, we will proceed with the programme, and discussion is in order upon this paper. I will just say to the members of this meeting that perhaps discussions are the most important parts of our meetings, and we hope that you will all feel at liberty—not only feel at liberty—but that you will embrace the opportunity to discuss these matters fully. This is an interesting subject, and an interesting paper.

Dr. Reed, Health Officer, Mansfield—I was waiting for somebody else to start this discussion, but there is no use wasting time. The question brought out by Dr. Buechner, in his paper, is certainly one of great importance to all of us who have anything to do with health departments. As to the danger and mortality of small-pox as compared with diphtheria, I think it does not require an argument at all. All you have to do is to look at the statistics and you will find that there are ten times as many deaths from diphtheria as small-pox. We can control small-pox by means of vaccination, which we cannot do in diphtheria. That brings us to the point that diphtheria is of more importance to us, as health officers in Ohio, than small-pox, because we have learned how to control small-pox, while we have not learned how to control diphtheria. We have had in our city since about the middle of summer, when it broke out, about 136 cases of diphtheria. We have been using rigid means to stamp it out. It has not been confined to any one part of the city—perhaps more to one part than any other—but it has been all over the city; and the question of quarantine is one of great importance. It leads to two points. In the first place, I believe we obtain diphtheria in more ways than carrying it in our clothes. The doctor has said, we may get it in milk. We may also get it in water. I found, on investigating it in our city, that the first cases occurred in a family that was, sanitarily speaking, as cleanly as could be found anywhere, and yet out of four members, three died in about two weeks. The question came up about the water supply, and I found that they used the water from a driven well; that the well was about 80 feet deep, and would be about on a level with a stream of water, which was, perhaps, 500 feet distant; it may be a little further than that. That stream of water led up a ravine, and at the head of this ravine were a number of butcher shops, and along this stream of water were a number of privies that were discharging their contents into it; on the bed of that stream was a gravel sub-soil as you might term it, a layer of gravel and sand. The well was driven into this layer of sand and gravel. On examining the water I found it was very bad, and showed immense quantities of organic material. I arrived at the conclusion that the disease came from that bad water: that the germs had been communicated through this stream, and last year being a dry season, they had found their way through this gravel bed into this well, because I was unable to find any other cause, or any other way in which I could explain it. Following these cases, other cases developed. We had another nucleus form on East Second street, at least a mile from the first case; and these cases on Second street had no communication with this family that had the first cases. Then another one was found way over on the other side of town. I found in each case local causes for the outbreak. From these centers were disseminated cases to other parts of the city by contagion. For instance, they had a sewer emptying out in the region of the Second ward school building, that was exceedingly filthy. It was a thing that was condemned a year ago, but we have been unable to get rid of it, and in that region we had more cases of diphtheria than in any other region, because it was more unsanitary in its surroundings: and we had the contagion spread more rapidly in that particular ward than in any other ward in the city, as the children carried the contagion to school. I have simply mentioned this to show you that from my experience we have local causes for the disease, and that we also have the contagion spread from one to the other. Now, that bring us to the doctor's paper. There is one thing that I think to say here, and that is with reference to rubbing the walls with dry bread. I know that is a good method of cleaning paper, but I will have to disagree with the doctor that it is of any advantage in ridding the walls of diphtheria. I have adopted the plan of fumigating the house with sulphur fumes. It is advisable under these circumstances, if possible, to steam the room—set boiling water in the room and let a little vapor form before using the sulphur, then use the sulphur so strong that no one could live in there; make it white with sulphur fumes, and keep it locked up in that way for at least three hours. That is the best method I know of. That is the method adopted by the quarantine station and first introduced, I believe, by Dr. Holt, of New Orleans, in disinfecting the vessels at quarantine stations at New Orleans. Again, where you use steam, it is not necessary to put the clothing under pressure; simply using hot steam is just as good as when put under pressure.

Dr. Buechner—I think the doctor misunderstood me that I recommended rubbing the walls with bread. It is one of the points that Loeffler gives; it is not my recommendation.

Dr. Reed—I don't think it is good anyway.

Dr. Buechner—Well, I don't have the extreme faith that some seem to have in fumigating with sulphur. We had diphtheria in one of our suburbs at Youngstown last spring, and I superintended the disinfecting of the houses myself, and I think it was done as thoroughly as it could be done. In one house I had, three weeks afterwards, a case of diphtheria, and one in another two weeks afterwards.

A Member—Are you certain, doctor, the case was contracted in the house?

Dr. Buechner—I think it was, sir; yes.

Dr. Kahle, Health Officer, Lima—This subject of diphtheria is something that is interesting us in Lima a good deal. We have had since the first of May something like 140, or between 140 and 150 cases, with a large number of deaths; and we have tried every way that is practicable to quarantine and restrict it. We have used the sulphur fumigation and it has all been done under the direction of the board. The fumigation is always done by the sanitary police, and under my instructions; and we have frequently had additional cases in the house after the disinfection. It has not given us the results we wish it had. The cases are scattered well over the city; it is not confined to any locality, and we cannot attribute it to any special cause, unless from contagion. We make a rule, where there is diphtheria in the family, to prohibit the children from attending school until four weeks after the last case in the family is pronounced well. We have considered the advisability of closing the schools entirely and see if we could not obliterate it in that way. Our sewer system there is somewhat imperfect, from the fact that only part of the sewer drops are trapped, and I have sometimes thought in that way it helped to spread the contagion.

The means that we have employed have restricted the disease, I have no doubt; but they are not limiting the cases as we hoped they would.

Dr. Smith, Health Officer of West Milton—Along in November, 1891, West Milton was without a board of health. It had lapsed and gone back. As Dr. Probst well knows, we had an epidemic of diphtheria break out in our town, a town of about a thousand inhabitants; and I think inside of about two weeks we had about eight deaths. The number of cases I cannot just recollect. I wrote Dr. Probst immediately about the epidemic, telling him we had no board of health, and he sent a communication to our mayor, and we called the common council together and they appointed a board of health; and the board of health elected a health officer and we went to work in earnest. Our health officer followed out the instructions sent us by Dr. Probst, minutely. I think in our town we have done wonders in the way of cleaning up. The health officer reported at the last meeting the cleaning out of fifty or sixty privy vaults, some of which had not been cleaned for years; and the cleaning out of wells and clearing away of manure piles and all manner of filth imaginable, and I think we have as cleanly a town as you will find in the State of Ohio. In one family I was visiting myself, I saw the most malignant cases of diphtheria, I think, I ever saw. I looked about to see the cause of this intense poisonous condition, as I am inclined to believe that if we have some unsanitary part of the house that the germs will multiply there more than other places; and I think probably the patients I had in that house contracted this severe form of the disease from unsanitary conditions. It was a new house and the water was pumped from the pump into a drain that led out into the street gutter. There was a neighbor who had a stream leading into the same drain, that had become plugged up. I found that out and told the owner of the premises about the condition of it and he went to work and cleaned it out, and it was the filthiest mess I believe I ever saw. In that family I had the most malignant cases of diphtheria I ever saw in my life. The gentleman was very careful and followed out strictly the rules of the board of health. After the children were buried and the disease was eradicated from the family, we burned, I think, probably fifteen pounds of sulphur, as Dr. Reed has spoken of, in the rooms, and through the house, taking all the clothing out and hanging it out in the rooms and airing it. I had a gasoline stove put on the floor and generated steam there, and closed up the windows and doors and in that way disinfected all the premises in which we had diphtheria. We also closed the school building for five weeks; at the end of that time we disinfected the school building, closed up an old well, and did away with an old privy vault, and introduced the dry earth system. At the end of five weeks there was not a case of diphtheria in town. But last week we had two deaths from sore throat. The physicians of our town are not satisfied as to the correct diagnosis of the disease. Some say we are having a bad form of tonsilitis. I think we have a mild form of diphtheria. This time our board of health has excluded those who have a mild form of diphtheria or tonsilitis, but I think the wisest thing is to close up the schools. Last week I believe I got one of the worst rubbings down I ever got in my life. A man met me on Sunday morning, and he completely turned me over for requiring a manure pile to be removed. He was probably the richest man in our town, and probably the most obtuse man in the town. We had notified him legally twice to remove the filth, and he objected. Monday morning we went to work with teams, and yesterday, when I left, the last vestige of the manure was being carried away. You can see what opposition a board of health will meet with in a town of one thousand or fifteen hundred inhabitants. I think in a small town we would have more trouble than in a large town, because, if you notify them to do anything different from what they are used to they are up in arms about it, and say you are introducing new ideas.

Mr. Cline, Portsmouth—I think what the gentleman says shows the importance of having men of nerve on the board of health, so that they can stand being abused. We have got used to it down our way. The paper that the Doctor has read has considerably interested me, especially in one or two points, and one was the quarantine of the adults of the family. It is right, but a trouble comes up sometimes. When you do that there is a heavy expense attached. Then there is a certain class in a community that commence to harp because you are becoming an expense to the city. I am sorry to say, too, that there are councils in certain cities whose members will stand upon their dignity, and say that the board of health is an infernal nuisance, because of the expense they are creating. And having that staring you in the face some members of boards of health are a little bit careful how they work. For one, I am always ready to go ahead and stop at nothing. Lock a man up and keep him there until the danger is over, and feed him while he is there, and make the city pay for it; and if it won't do it, why take up a collection. Then as to disinfection; there is a question that I have thought of considerably. I think the burning of sulphur, if the room is closed up tightly, is a very good thing. We have used it, and we feel with considerable success. But the question that he brings out of using bread to clean off the paper I don't quite agree with. My theory is to tear off the paper from the walls, then when you get it cleaned off, fumigate the walls and place new paper on; then you probably can get it stamped out.

Dr. Rardin, Health Officer of Portsmouth—It might be well to take into consideration what we have to meet, and that is the danger of a false diagnosis of various forms of diphtheria. We have had just such an experience in our city. In fact, in three instances that have come under my own observation, membranous croup has been diagnosed, and following within a short time we would have a case of diphtheria—if not in the same family, in a neighboring family. I have looked over the programme, and I see nothing said about this subject in any other paper; and while we have never required a case of membranous croup to be reported, I am of the belief that they should be reported, and the same precautions taken, as in a plain case of diphtheria. We had a case in our city a week ago, where a child died of croup; child No. 2 took croup and was sick two weeks; child No. 3 and No. 4 took diphtheria, and one of them died. I should like to hear what is going on in other cities in regard to this question. I am firmly of the opinion myself that all cases of so-called membranous croup should be reported and should be placarded, and the same precautions taken as in diphtheria, because we don't know at what time a case of membranous croup will develop into diphtheria, or other cases of diphtheria at least result from it. I am sorry that I did not get to hear all the paper that was read; but my opinion is that the proper way to disinfect the walls of a room is to remove the paper and use a bi-chloride solution, and thoroughly fumigate. I think we may accomplish good in this way if not attain a complete success.

Dr. Probst—Although it is not the subject of the paper I might answer what Dr. Rardin has said in regard to reporting cases of croup. I would say that the State Board of Health, at a meeting six months ago, probably, adopted a rule requiring all cases of membranous croup to be reported to local boards of health, and treated as other contagious diseases are treated. That action of the board was printed, and sent to all local boards of health. I do not know why you didn't get it.

A Member—I did not get it, and I was going to bring up that very thing.

Dr. Probst—I will say that I can recall several cases that have been reported to me that bear out the position that Dr. Buechner has taken in regard to the quarantine of adult members of families where there is diphtheria; and I agree with the Doctor, if he takes that position, that it is easier carried out in a small town than in a large town. Take the city of Columbus, where we probably have diphtheria cases reported every week in the year—we are practically never free from it. In the smaller places, however, they are usually free from it most of the time; a case occurs perhaps once in five or six months, or such a matter, and is usually imported; and if the board of health will take vigorous measures with the first case, in all probability they need not have others. I recall such an instance in the town of Bedford, near Cleveland. A child was taken sick with diphtheria. The board of health immediately quarantined the house just as in small-pox; a guard was placed over the house and no one allowed to go in or leave the house. The inmates were furnished with provisions, and everything needed. The disease was confined strictly to that family, no other cases occurring in town. I recollect a case where a mother took a child from Lima to Bellefontaine. The child had come from a family in which they were having diphtheria and was slightly ill, so it was supposed the case would develop into diphtheria. The authorities of Lima notified the authorities of Bellefontaine that the woman was on the way with a child that likely had diphtheria. The mother, child and family where they went were quarantined as soon as they arrived, and the disease was confined to that one house. One or two other cases, I believe, occurred in that same family. Another instance occurred at New Vienna. They had an outbreak of diphtheria in that town, and in one house which was particularly bad on account of its sanitary condition, they had a number of cases of diphtheria. In the house in which the disease first appeared, I believe they had six or eight cases at that time. The disease apparently abated, and they had no other cases for several months, when Dr. Trimble, the health officer, telegraphed me that diphtheria had again broken out in this house, and asked what should be done. I telegraphed him to quarantine the entire family. That was done, and he afterwards wrote me that the disease was confined to that one house and did not spread. I think there is no doubt that if cases of diphtheria are dealt with in that manner, especially cases that are just imported to a town, that it can be confined strictly to the house in which the first case appears. I would like to say one word in regard to the sulphur fumigation. I believe in it. I believe it is an efficient means ot destroying the germs of diphtheria; and I see one way in which perhaps cases occur after fumigation, and that is on account of not fumigating all the rooms of the house. Physicians all know that they are very frequently not called to a case of diphtheria until two or three days after the child has been taken sick; probably the child has been running about the house, and has been in every room in the house before it becomes very sick. The physician is sent for, and some room selected for a sick room. When the child recovers and disinfection is practiced, it is usual to disinfect that sick room and all the other parts of the house are neglected. The germs may have been scattered there before the child was taken to the sick room. I think that may be the reason why sulphur fumigation sometimes fails to stamp out diphtheria.

Dr. Hoover—I have listened to the remarks of the various gentlemen, and I have inferred that they are not all favorable to the sulphur fumigation. I am quite a friend of it; but it is like every other remedy, it wants to be properly applied. I have failed to catch the methods in use by the different gentlemen that have spoken, and I would like to ask Dr. Kahle, of Lima, how the sulphur fumigations were used.

Dr. Kahle—We have endeavored to follow out the instructions of the circular issued by the State Board.

Dr. Hoover—You spoke a while ago of using fifteen pounds in the house.

Dr. Kahle—That was not I.

Dr. Hoover—I thought it was you, Doctor. Experimentation has been made upon this point, and it has been shown that unless there is a certain saturation of the air in the rooms with sulphur fumes, that it is utterly useless. If you stop short of that degree you have not disinfected the room. You have simply subjected the germs to a slight temporary inconvenience, and left them to recover in a short time. I have used sulphur fumigation. I ought, however, to state that I have not had a large experience with diphtheria, but I have had enough. I am partial to the sulphur fumigation, but I am always particular to see that it is carried out according to my idea of it—not my idea, but what I have learned of the results of experimentation by others. I believe it is Dr. Sternberg, of the United States army, who claims that unless there is the degree of saturation of the atmosphere in a room that will result from the perfect combustion of sulphur in the proportion of four pounds to the thousand cubic feet of air space in the room, the room having been first tightly closed, and that means that all the cracks and crevices should be stopped, so that there is no egress of fumes, or ingress of fresh air—that unless such precautions as that are taken and that amount of sulphur used, that it is not disinfected. He claims further, too, that it is not necessary to use the steam; that the dry fumigation is just as effectual as its use with the steam. Now, while I have not, as I say, had an extended experience, I have had an experience with diphtheria that has led me to place confidence in this method of fumigation; and then afterwards cleaning the paper with bread and washing the woodwork with the bichloride solution. In my connection with the State Board of Health I have seen methods of disinfection practiced by different persons. One in a public institution in the State, in which all of the clothing that had been used by the persons who had the disease, was disinfected by being immersed in a solution of bichloride of mercury; but when the proportion of bichloride of mercury was inquired into, it was found that a *small amount* of bichloride of mercury had been placed in a tub of hot water. Now, gentlemen, it is plainly evident to you all who understand the value of disinfectants that they might just as well have done nothing. All of these steps want to be taken systematically, and with regard to the strength of the solution used. The disinfection should also be continued for a certain length of time. I don't believe, with Dr. Reed, that three hours is long enough for fumigation. I would prefer to leave it twelve hours. There must also be some method used for cleansing the paper, and I believe the bread an excellent plan, and wash the woodwork down with a bichloride solution, with one part of bichloride to a thousand of water. Carpets are difficult things to disinfect. In the city we send them to the factory and have them steamed. I would not recommend anything short of that. That is not always possible in smaller towns where such means are not at hand. But I have had several instances, a number of instances, where not a single case of diphtheria occurred where these precautions were followed up under my direction.

A Member—I would just like to ask the gentleman a question: Why does he use bread in preference to something else?

Dr. Hoover—Well, sir, I don't believe there is any virtue in the bread; I would just as soon take a moist cloth, and the only reason I take bread is because it is an excellent matter for cleaning the paper, and not so apt to leave streaks. And again, while there is a certain amount of elasticity in the bread, there is also a certain degree of moisture, and what is adherent to the paper will more readily adhere to the bread. Excuse me for one word more: While I heartily agree with these gentlemen who recommend the pulling off of the paper, yet, gentlemen, that is not always possible. It is somtimes a pretty heavy tax on people, and they cannot afford to do it very well. Of course, if it resolves itself into a question of saving the life of another child, or saving it a severe spell of illness, then no one would hesitate, because the life and health of a person is inestimably more valuable than the paper. But, if safety can be secured without it I don't believe it is necessary, and I believe that if the method that I have suggested is followed out, thorough safety can be secured.

Dr. McKee, Health Officer, Caldwell—While all the talk has been with regard to cities and villages, I find in my locality where the practice is wholly in the country, and we sometimes start out and are gone for three days, a question comes up with regard to visiting between families. You will see four or five old ladies all gathered in at the house of sickness, and the question arises with me: How are we going to control or quarantine there? What means have we of quarantining these country houses? Now I have a case like that. A child about seven years old was taken sick and I was called to see it, and before I got into the house I was satisfied the child was dying from membranous croup; and I found on going in three more suffering from diphtheria—the child with croup and one other dying. When I went into the house there were at least six or eight neighbor women in there, and not less than four neighbor children. I know of no way to quarantine these houses to prevent that. I don't know whether we have any law by which we could quarantine those buildings or not. I would like to hear from some one in regard to that.

Dr. Buechner—There is certainly a way to reach this. The township trustees in every township are just as much bound to carry out the sanitary measures as the board of health in a city. We had that very thing in our place. Our township trustees were a little dilatory about it and I went after them. I told them that if they didn't enforce it that I would prosecute them, and I notified the doctors that they had to report every case that they had in the township to the township trustees, and they got my cards and placarded every house in the township. There is no trouble at all if you use a little energy and backbone and enforce these things.

Dr. Conklin, Canton—Dr. Hoover speaks of destroying the germs in carpets. Now, my practice has been, where I find a case in the outskirts of the town, and where they are unable to do anything further, to advise them to have their carpet boiled one or two hours in boiling water.

You must have strength sufficient to destroy the germ. It is the improper use of sulphur fumigation, that is the cause of its being inefficient. As Dr. Hoover says the result has not been to destroy the germs.

Dr. Fisher, Health Officer of Toledo—Before I say anything in regard to the diphtheria we have had in Toledo, I wish to make a statement in regard to the force we have connected with the department. We have a sanitary sergeant, and eight sanitary policemen, good competent, intelligent men. As soon as a case of diphtheria is reported the man in whose district it is visits that house and puts up a card. He then makes a written report to the office, naming the locality, the number of people in the house, the age of the parties infected, the sanitary conditions of the surroundings, and the water used, etc. A notice is then sent to the principal of the school, if any of the children are attending school, that there is a case of diphtheria existing in this house, and that they are not to be admitted to school until they are notified by the health department. Then the sanitary policemen are requested, and do it, to visit these houses and keep an eye upon the inmates to prevent their having any communication with the neighbors. If there are any adult members of the family working in stores or any other place in the city, their employers are notified not to allow them to continue in their work. After that is done, and the case has recovered—or if the case dies, two sanitary policemen attend the funeral. It is private; no neighbors allowed there; no person allowed in the house They go to the cemetery with the body and one man stays there and disinfects the house. In ten days or two weeks, which is too short a time, the children are allowed to go back to school; but we intend to increase the number of days between the recovery and going back to school. Now, since 1884, we have had in Toledo, in 1884, eighty-six cases of diphtheria, and twenty-eight deaths; in 1885, 196 cases, and fifty-five deaths; in 1886, 174 cases, and thirty-three deaths; in 1887, 112 cases, and thirty-one deaths; in 1888, seventy-six cases, and seventeen deaths; in 1889, 351 cases, and 102 deaths; in 1890, 485 cases, and 162 deaths. Last year, 1891, we had 295 cases, and eighty-seven deaths. The total number of cases since 1884 to 1891, inclusive, is 1,775 cases, with 515 deaths; that is 33 per cent. of a mortality in this disease —1 to 3—and it is terrible when you think of it. I have used every effort to get a hospital this last year in which to place cases of diphtheria and scarlet fever. Now, it is all very well to talk about disinfecting houses and rendering these germs inert, and stamping out the disease but you must take into consideration that in a large city there are two or three families residing in a one-story house of four or five rooms. For instance, among the Polish families we have had a great deal of this disease. I can mention now one house where we had diphtheria; there were three families living in a one-story house with five rooms; one child was taken sick with diphtheria, and I tried to find a house to take that child to; but was unable to do it. The child died, and from that case I think we can account for about fifty other cases in that neighborhood, with three deaths in the house. When these deaths occur in a small house like that it is impossible to disinfect the house; the people must have some place to remain; you cannot turn them out in the street in cold weather. We use the sulphur disinfection, four pounds to one thousand cubic feet of air space, and we try to do it as thoroughly as we can; and we compel them to scrub their floors, and use every means we can to stop it. We had day before yesterday, reported from the first of the month to that time, about twelve cases, with eleven recoveries. I was in hopes a few days ago that I would be able to take off the diphtheria cards through the whole of the city, but before night we had three other cases reported. Among the better class of people we don't have so much trouble; if a case occurs in a family where they are well off, or in good circumstances, we remove the patient to the upper story of the house, and the other members of the family are removed from the house, if possible, and kept away from them. I believe, for obvious reasons, that the paper of the ceiling should be removed. There should be no rubbing of bread or anything else; it should be torn off, because these germs rise with the hot air, and if you do not feel like taking off the paper from the wall, the paper should at least be taken from the ceiling.

Dr. Stutz, Health Officer of Upper Sandusky—I was called to see a case of diphtheria in the country about two months ago. Just the week before that a child had died. The physician there was attending it. I think all the children were attending school, and they were taken to the neighbors. I was called to see that case of diphtheria. It was a child about three years old, and the gentleman of the house was suffering from it, and the little girl baby died. Disinfection was very badly performed. The doctor who had attended the first case had told them they might wash up the floor and walls if they wished, the furniture at least, and use a little chloride of lime. I attended the child until it died; the gentleman recovered. I waited about two weeks, still keeping these children away from the house. I ordered then twenty pounds of sulphur. There were two rooms, about 15x20 I think. I put the family in one room, and closed the sick room tightly by putting rags and paper in the keyhole, underneath the door and around the door-sill, and I used twenty pounds of sulphur, and used it all night. I told the gentleman that if they could not stand it to open the doors and windows and let it escape; but he said they stood it very well. Then I ordered the room and furniture well cleansed with the bichloride solution. Then I disinfected the second room. After the house was thoroughly disinfected the other children came home; they have been at home now about six weeks and the disease is eradicated. By using the sulphur we got rid of the disease entirely.

Dr. Reed—I would like to say a word in regard to disinfection—that is, in reference to burning sulphur. In order to get the full effect of the sulphur burned—it is not the amount burned, but the complete oxidation. Burning twenty pounds in an open kettle is not worth as much as three pounds burned in a good stove and getting a complete oxidation. In order to do that I have constructed a stove on purpose, and I am now having another made similar to that. They are similar to that used by a tinner, only made of heavier iron, so that the most complete oxidation may be had. I put the sulphur stove in the room and set it in a pan of water in order to prevent danger of fire. I keep that going in the room until it has burned completely out, or completely oxidized, to speak scientifically. Then I have an iron hook on purpose, which I slip in and take out this stove and close up the room and leave it stand so with the fumes in there so thick that you can't see through it. This I leave three hours before the fumes are allowed to pass out, and I go over to the next room, and the next room, in this way, from the cellar to the garret—even the cellar. I find it very difficult in many cases to have the people stay in the house until it is done, and in small houses I cannot do it at all. In fumigating houses in this manner I have only had one instance where diphtheria has occurred in a house that has been fumigated, and it is hardly proper to say it was fumigated; it was not. It was when we were using an old pot to burn the sulphur in, and it was supposed to have been fumigated thoroughly; but it was not. At the present time, as soon as the child dies, the house is fumigated with everything in it, as a preliminary fumigation; then I have the carpets taken out and taken to the carpet cleaner and steamed, and the matresses and pillows and everything of that kind that can be are steamed; everything that cannot be steamed is boiled in a solution of bichloride of mercury. Then the floor is washed up with bichloride of mercury, and wherever possible the walls, and where the walls cannot be washed in this way we have the paper thoroughly cleaned. Then, after all this is done, I refumigate the house in the same manner, and put the carpets in place before the family returns to the house to live in it. Where it is possible to isolate other members of the family I do so at once. And I have not had a single case, after taking these precautions, where scarlet fever and diphtheria has occurred. It is the amount of sulphur you completely oxidize in the room that does the work.

Dr. Fisher—In the diphtheria that existed in our city, the second and third wards, the older wards of the city, where we have good pavements and good sewerage, had but very few cases of diphtheria; the cases occurred mostly in the outer parts of the city where the pavement are not very good.

Dr. Hoover—Permit me a remark. Dr. Reed makes some very excellent statements, and speaks particularly about the oxidizing of the sulphur, and that it was necessary to thoroughly oxidize it; that it doesn't make so much difference about the amount, so it is thoroughly oxidized. I asked the doctor just now to state the difference between burning sulpur and oxidizing it, and he said he couldn't do it. Now there is a difference between oxdizing four pounds or one pound to the thousand cubic feet of air space, and we will say oxidizing it instead of burning it. The point is that there must be a complete saturation of the air in the room, and you can only get it—and I am not giving my experiments, but the experiments made by Dr. Sternberg who has had, perhaps, more experience than any other man in the matter of germicides—and it has been determined by him under repeated tests that four pounds of sulphur to the thousand cubic feet of air space perfectly oxidized or burned, will accomplish that result.

Dr. Reed—I desire to make a short answer to Dr. Hoover. He probably misunderstood me. I meant to convey the idea that if you oxidize or burn completely four pounds to the thousand cubic feet it is better than incompletely oxidizing fifteen or twenty pounds. The gentleman to the right said he used fifteen or twenty pounds; I say you cannot get as good oxidation in a kettle as in a stove made on purpose, or else we would use kettles for our fire-places.

Dr. Buechner—From some of the remarks that I have heard I am inclined to believe that some of the members think yet that diphtheria may be produced by filth, bad sewers, bad drainage, etc. Now such excellent authorities as Roux, Klebs, Loeffler, etc., deny that absolutely. They say there is nothing in it. The point was made here that it might cost the community a good deal to quarantine whole families. I will say this: I think that where lives are considered dimes should not be considered, and if you go forward in the right way there is no trouble to accomplish it. I fought our council, I fought our board of education, and I fought hundreds of our people, and I always got on top; I made them pay the bills. They kicked and kicked, but they did pay them. Now, during that time that we had diphtheria in Youngstown, since about last October, the expenses I don't think have exceeded $200. Now, what is that for a city of 33,000 inhabitants to pay to prevent the spread of diphtheria? I think it ought not to be considered for a moment.

Now, I won't allow the family to go outside of the house at all, and they understand that they have to stay there, and they do stay there. If a case is reported to me, and our doctors generally report pretty quickly, because they know they will get into a scrape if they don't, I make it a point to go there and see every case. I am not very backward in taking a card right off, if I know it isn't that disease. I don't care how old a practitioner is, he will sometimes have a doubt about a case of diphtheria. I think sometimes it is impossible to diagnose it. There is no better authority than Professor Roux, and he tells you that in eighty cases that were admitted into the hospital as diphtheria he found nineteen where he didn't find bacilli, and therefore declared it not to be diphtheria. But I think it is better to quarantine even a case that is not diphtheria than not to quarantine one that is. There is no trouble at all if the necessary energy is shown. Of course you will make yourselves a great many enemies, and there is where the trouble comes in; and I think Dr. Lindsey is exactly right when he says health officers should be medical men, and that he should be a medical man of some experience, so that he can give a decision in contagious diseases. But he says he should not be a general practitioner, because he will either offend his customers and lose them, or he will not do his duty.

Dr. Fisher, of Toledo—From the Doctor's remarks I suppose he thought that when I made the remark that the second and third wards were well sewered, that I thought filth and bad sewerage were the causes of diphtheria. I don't think so; and I don't suppose any person else thinks so. In regard to city councils—we don't pay any attention to city councils; what we do, we do; we treat everybody alike and we pursue a straightforward course, and don't turn to the right or left, and we accomplish what we start in after, too. A short time ago, in getting rid of a nuisance there, a large pond of water, they said it will cost $35,000 to get rid of it; I said I don't care if it costs $135,000, you will have to get rid of it.

Prof. Nelson—This is most pitiful that there should have been 500 deaths in less than ten years from diphtheria in this one city, and the health officers and sanitary officers of the State freely admit that they do not know the cause of diphtheria nor its origin. I find in looking over the authorities within my reach that while the germ theory of disease is very generally accepted, almost universally so, yet there is the widest variation in its application. For instance, I have just been reading a book that claims that the bacilli of diphtheria are not the cause of it at all, but an accompaniment. I find the Philadelphia board has taken that position boldly, and claims that diphtheria is due in every case to rotting fruit, and especially the peculiar rot that is found in the potato; and claims that the place to look for this disease in the home is not the well, or the sewer, but the cellar. Certainly it will do no harm to clean up the cellar, and I am inclined to believe that there is a good deal of disease lurking in a barrel of rotting potatoes and apples, even though we fail to connect this with this specific disease. Yet there is something that has led me to believe that there is more connection between them than many of us are willing to admit. Perhaps I should say that these rotting vegetables and fruits simply furnish a proper hiding place for the disease. Some recent investigations show that sulphur, and especially that form of it known as sulphuric acid, in a weak solution, will prevent the decay of the potato, and arrest the sprouting of it, and therefore we are learning, apparently, that that particular form of trouble, a germ of some sort, yields to sulphur; and it is therefore very probable, but not yet absolutely settled, that these other germs do yield to this same agent. I find in my reading that a good many English and German authorities deny that sulphur is a perfect disinfectant; they use it because they are seeking more light.

Dr. Buechner—Mr. President, the discussion on this paper has almost entirely been carried on about disinfectants. Now I would like to hear more of the members say what they think about a strict quarantine; that is the point of the paper, and I would like the members to express their opinion upon that.

Dr. Probst—Mr. President, I would like to ask, especially of the health officers here, or members of the boards, how many boards of health there are in our State that practice quarantining adult members of the family where there are cases of diphtheria.

From statements made by members present it was shown that it was practiced at Akron, Portsmouth, Elyria, Findlay, Canton, Newark, Toledo and Geneva.

Dr. Hoover—Mr. President, I want to say that I hope none of these gentlemen have misunderstood the question. It is not only that adult members who have diphtheria are quarantined, but the family are quarantined; the entire family are quarantined. Is that the question that these gentlmen have been answering?

Dr. Reed—Mr. President, as I understand it, in Dr. Buechner's quarantine, if the family has one case of diphtheria that entire family, men, women and children are quarantined and kept locked up. I am free to say we don't do it in Mansfield.

Dr. Buechner—I do that very thing; where there is one case of diphtheria in a house I shut them up, men, women and children, white and black.

Dr. Stewart—At Cedarville, we quarantine against scarlet fever; that is we endeavor to do so, but it is broken over.

Dr. Carrothers, of Findlay—We examine the house and give certain instructions for the safe keeping of the family, and the prevention of the spread of the disease. If there is any necessity of the household, we supply it without the liability of carrying away the disease. In this connection, however, I wish to say that recently a case of diphtheria came under my notice, and it was not reported; that is, I believe a physician had not attended that case, and one or two members of the family had been attending school, and there was a decided spread of diphtheria a few days ago. The superintendent of the schools called on me last Monday morning, and from facts learned I concluded it had been introduced into the school room by school books. It is a common thing when a child is having diphtheria, especially after having passed the febrile stage, that the discharge from the nose will get onto the hands, and the handling of books make an excellent means by which it can be conveyed to the school room. In that case we ordered all the books of all the scholars to be retained in the school room, and ordered them to be thoroughly disinfected, as well as every room in the school building. Our health officer and sanitary police followed that up with instructions to each family to thoroughly disinfect all the clothing and rooms.

The Chair—I would like to ask the Doctor how long he requires the children to remain away from school?

Dr. Carrothers—That is a very important question. We went at this matter pretty thoroughly with the hope that by this thorough disinfection of the school house and the books, we might be able to resume school within a very few days. It is a matter of much importance to the school children, not to lose any great amount of time, and by measures of that kind we can prepare for their early return to the school room, and much safer than in other instances where they had been quarantined, even for a matter of twenty or thirty days, which I think is not often done. I think that sulphur fumigation fails only when improperly applied. It is such an easy matter for articles of clothing or anything that might be contained in the pockets, or some articles of furniture, or a toy or book, or any little article to escape this fumigation; I think that is the cause of failure in fumigation.

Dr. Stewart—How do you disinfect the books? How do you get the sulphurous gas between the leaves that are so tightly pressed together? Can that be done?

Dr. Carrothers—Shall I answer that question? The nearest we could come to it was to place the books upon slats, opening them out, to enable the fumes to enter as much as possible: that may not be thorough or complete, but perhaps it is the closest we can come to it.

Dr. Smith—The most thorough plan is to burn them.

A Member—Not to wander from the subject I would like to ask the gentleman when he tries to quarantine a family, how he does it?

Dr. Buechner—They refuse a little at first, but I always get backbone enough in the authorities so that they will inflict the fine I want them to. I write out the orders as I want them, and our board always sustains me very kindly in everything I do. Our city solicitor thought that it was best that the council would approve them; I told them I didn't care a snap whether the council approved them or not; and if we made a regulation it was as good as an ordinance. I had them published and we enforced them. Our council kicked against buying a small-pox hospital; they wouldn't buy it. Mr. Pollock and myself went and bought a property for $1,100, and I made them pay for it.

A Member—Doctor, you can't enforce any ordinance without public opinion will bear you out; we have tried that thoroughly.

Dr. Buechner—You go to the better class of the people and they will support you right along; I always find that. Now, I probably have to deal with as poor a population as any health officer here; we are a large manufacturing town, and we have a very large foreign population, and some of it not the most desirable kind either: we have a great many Italians there now, and if there is a filthy, dirty set in Christendom, they are the Italians; they are huddled together in little houses. I had lots of them to clean out.

I found, for instance, in one room 9x12, nine people asleep; I cleaned them out that same night. The first cases of diphtheria were among the Italians. Then we have Poles and Slavonians. The only way you can get along with those people is just to show them the authority of the law. I always find the better class of our population support me in it. I threatened to resign a little while ago, because I thought the authorities did not support me, and there were hundreds came to me and begged me not to resign. They said "Our sanitary laws will not be enforced if you resign." I have been health officer in that town for 20 years, and I find if you insist you can enforce those laws without any trouble.

Mr. Cline, of Portsmouth—I have been listening for him to let out just how he enforced those laws; whether he placed a guard there and guarded these houses, day and night, or how it was done.

Dr. Buechner—Well, I can very well explain how I do that. In the first place, as soon as the case is reported I send my sanitary policeman there, and he puts up a card. I have our city ordinances all printed relating to contagious diseases, and there is one copy left in every house where a card is put up, so that he can not claim ignorance of the law, which is very frequently claimed by people. Then every policeman in the city is instructed by the mayor and by our chief of police to arrest anybody that goes into a house where there is a card up for diphtheria or scarlet fever; anybody that goes in or out without a written permit from me. In diphtheria I won't give any permits at all. The first day before the card is put up, if they want to leave the house (men that are working), they disinfect themselves and leave the house, and remain away from the house; they can go to work; otherwise if they remain in the house after the card is put up they will have to stay there. I had one case where a man slipped out in the morning and returned in the evening, and the policeman would not let him in his own house, and he had to sleep in the barn that night; I find that I can keep them in. I made two or three arrests, and they were fined, and it became known through the town, and I have no trouble in keeping them in. Quite frequently where men are working in our public works there, and when a man promises me—I have lived there so long, I know almost everybody, and whether I can trust them—and if a man promises me that he will not come in contact with an infected child, I will give him a permit to go to work; that is where there are cases of scarlet fever; but in diphtheria I won't do it. They have either to disinfect themselves and leave the house or stay in there. Then I have a sanitary policeman to go every day and provide for their wants. He takes a list of what they want and sends it there. I had a fight with the township trustees; they said they couldn't pay for anything where there was a red card on the house. I said all right, if you don't pay it, we'll pay it. Last week the city commissioners kicked; they wouldn't pay the bills any more, so we appointed a committee (the question isn't decided yet), to meet with them; but I don't care who pays it, it will be paid, for no person I shut up shall starve. I made an arrest in October, and it has not been necessary to arrest anybody since. When we had epidemics of small-pox there we put cards on the houses, and in spite of that they would slip out. I urged that they should be sent to the pest house. "Wait a little, wait a little;" finally I put my foot down and I sent them, and suppressed it. There is no use to fight those contagious diseases half way; if you want to do anything about it go the whole hog or none at all.

Mr. Cline—We have a town, Portsmouth, of 15,000 inhabitants; we have six wards, and we have one policeman to each ward, therefore six policemen, and I don't think I exaggerate when I say the wards, two of them at least, will run a mile and a half one way and a mile the other. That policeman can guard the house magnificently for us. The only way we can keep them in successfully is to put a guard on day and night, and half the time you have to arm that guard with a shot gun. The Doctor's rule won't work in our town.

Dr. Buechner—You haven't enough policemen.

Mr. Cline—We can't afford any more. Our city council say they can't afford to pay the police on the board of health. We have to fight that.

Dr. Miller, of Akron—The Doctor from Youngstown has very nearly given a record of what Akron does, with perhaps a little modification in this respect. When a case of contagious disease is reported the sanitary policeman goes to the house and if the husband and father is at the house he is quarantined with the family; if he is away we give him an opportunity to stay away during the time that they are quarantined; and so far as providing for the family, the township infirmary director is notified of their wants, and issues orders for groceries to supply them during their period of quarantine. The sanitary policeman informs me that the children are kept out of school two weeks after that time—after the card is taken down and the house disinfected.

The Chair—I feel loth to call you off from this discussion, and have been indulgent because it has brought out very valuable experience upon perhaps the most interesting subject that we will have before our meeting; but we have a paper by Dr. Probst, and we wish to complete the programme. Before we proceed to that paper I would like to ask those members of the meeting who have come in late that they give us their names on the register that we have here, and their place of residence. We wish to know how many boards are represented at this meeting. These meetings are perhaps the most valuable work that we are performing. We come in contact with the health officers and health authorities from many boards of the State, and we hope to reach them all, and in this way we will perhaps bring up the delinquents; if we know who are here, and what boards are represented we can make use of it in the future perhaps. Dr. Probst is on the programme for "The Registration of Vital Statistics," and will now proceed with his paper.

THE REGISTRATION OF VITAL STATISTICS.

By C. O. Probst, M. D., Secretary of State Board of Health.

The registration of vital statistics should be of special importance to health authorities, for without such statistics their efforts to prevent disease must ever be indefinite in purpose and uncertain in aim. In sanitary warfare we must know the nature of our enemy, and his position and forces, that we may tell where to lay siege and starve him out, and where by a sweeping charge, to annihilate him. These facts can only be supplied by statistics—by studying the meaning of many observations recorded for long periods of time.

Environment and heredity control man in all his relations with an earthly existence, and by the use of vital statistics we endeavor to show what modifications of these tend to cut short or prolong it.

Man is the most valuable possession of the State, and this value varies with his ability to labor—according to the condition of the public health. But while the State exercises the greatest care in recording the titles and values of its real and other property, but little attention is paid to questions affecting the value of its chief jewel—the people.

The registration of vital statistics may be said to be a record of the vital transactions of the State, marriages being the investments, births the profits, and deaths the operating expenses and losses. It is to the State's interest to make as many good investments as possible, i. e., to encourage marriage between healthy persons of proper age, and to reduce operating expenses and losses (deaths) to the minimum. To know how to do this it is necessary, 1st—to record every marriage, and all relating facts, such as age, nationality, color, etc., which may in any manner influence the marriage rate. Of course other facts must be studied in connection with vital statistics in finding an answer to the question—on what does the marriage rate depend?

The births are the profits, and must be well looked after. Not only the number, but more especially the conditions, sanitary, social or otherwise, that tend to increase or decrease the number.

But the State can do little to influence the birth rate compared with what she can do to lower the death rate. Sir Edwin Chadwick, one of the world's greatest sanitarians, said that he could build a city that would have any desired annual death rate from 50 or more to 5 per 1,000 inhabitants.

If this statement be true, and it has been indorsed by many eminent authorities, is it not surprising that Government does not more thoroughly investigate the causes of excessive mortality and take measures for its prevention?

The sanitary reforms in England in the last forty years, which have resulted in such an immense saving of life, and a continued reduction of the death rate in spite of their increasing population, were the direct result of knowledge gained by a systematic registration of vital statistics commenced in 1836.

It was by the study of the vital statistics of Massachusetts that Dr. Bowditch was led to the recognition of the relation of soil moisture to the production of consumption; while the same fact was independently arrived at by Dr. Buchannan in England, by studying the statistics of a number of English towns. The transmission of typhoid fever and cholera by means of drinking water is another example of a great sanitary truth evolved by statistical methods.

The registration of vital statistics is also required to identify the individual with relation to his family and community. In matters of inheritance or other claims it is often necessary to prove, 1st,—that the parents, or possible grandparents, of the claimant were legally married; and 2d,—that the claimant was in fact born of these parents. This may require official records of marriage and birth. It may also be necessary to show that one or more persons connected with the claim are dead, and possibly, as in settling a life insurance or pension claim, the cause of death. For this purpose it may be necessary to secure a legal record of a death.

The older a country the greater the necessity becomes for such records; for while for one or two generations these facts can usually be proven by living witnesses, after this an official record may be *sine qua non* in securing an estate, or in proving a claim. Dr. Ashmun, for many years health officer of Cleveland, informed me that scarcely a day passed that the records of the health office of that city were not consulted for purposes of this kind.

But the principal object of this paper is not to advocate the necessity for the registration of vital statistics—there are none here probably who do not appreciate their value—but to review briefly the system in vogue in Ohio, point out some of its principal defects, and urge upon this meeting the necessity for securing changes in our laws that must be made before the practical benefits of such registration can be fully obtained.

The collection and registration of vital statistics in Ohio, except for Hamilton county, which has a special law regulating this matter, are made as follows: The assessors at the time of listing personal property for taxation, which is annually, obtain a list of the deaths and births that have occurred in their respective districts during the preceding year ending March 31. They are paid two dollars a day for their work, and are usually allowed in this county 40 days for collecting information required, and for tabulating their reports. Their reports are made to the probate udges, who record the facts given in regard to each death and birth. The probate judges report annually to the Secretary of State who makes an annual report to the Legislature, published in Ohio statistics. The facts reported to the Secretary of State in regard to births are very meager; those in regard to deaths are probably sufficiently full if they were accuate and if all deaths were recorded, but the opposite is true.

Our system of registration is wrong in many particulars. The assessors have little interest in the work, and no incentive to make correct reports; they are paid by the day and not for the number of births and deaths registered. The time between a birth or death and its registration is too long—may be a year, and facts are forgotten, many families change location, and concealment of crime is made easier. The worst feature is the inaccuracies regarding the cause of a death, the most important fact to sanitarians connected with it. This datum is ascertained by men unfamiliar with medical terms, and furnished by members of the family equally ignorant in this respect, who depend upon what they remember the physician to have told them during the last illness of the decedent.

Another source of error in regard to the cause of death arises from the fact that the medical attendant may be totally ignorant of medicine, as there is practically no restraint on the practice of medicine in Ohio. So that even if the family remembers what the physician said the person died of we can have no faith in the diagnosis in any particular case without knowing who was the attending physician. It is surprising to me that the U. S. Government, in settling pension claims, will accept the records of the probate judge's office as *prima facie* evidence of the cause of death when this fact rests on what the family assert the physician to have told them. There is absolutely no precaution against a false record of death, as the name of the attending physician is not recorded.

The registration is made by the probate judges without compensation. This usually means poor work in any department. Many of the errors of the assessors in regard to the cause of death might be corrected if their returns were made to medical men, for we cannot expect probate judges to have the requisite knowledge of technical medical terms.

Marriages in Ohio may be by license, granted by the probate judge, or by the publication of bans. A record is kept of all the licenses issued, and in addition every person authorized to solemnize marriage is required, under penalty of failure, to transmit a certificate of each marriage to the probate judge, who records the same. The probate judges report annually to the Secretary of State all marriages recorded. But "There's many a slip betwixt license and marriage," and a record of licenses issued does not represent the number of marriages made. Furthermore, a record of license is no proof of marriage. There is great negligence on the part of ministers in returning certificates of marriage, and the records are to this extent imperfect. The following item clipped from a daily paper is apropos:

> TIFFIN, O., Jan. 19.—An examination of the records in the office of the probate judge of Seneca county reveals the sensational fact that no fewer than ninety-five marriages in this city and vicinity contain a legal defect which may cause many embarrassing complications as soon as the fact becomes generally known. In compliance with law, all clergymen and magistrates performing marriage ceremonies, are required to make returns of the same within a period of three months thereafter. Failure to do so involves a fine, and hence about twenty ministers of the county may be brought to time to answer for their carelessness. An evening paper of Tiffin will publish a full list of the one hundred and ninety parties who took out marriage licenses from 1881 to 1891, inclusive, and upon which there are no records to show that the marriages were ever consummated.

The published statistics of the Secretary of State bear witness of the incompleteness of reports from probate judges. Taking the death rate for census years, when the population of the State can be given with comparative accuracy, we find it according to Ohio statistics, to have been in 1870, 8.88 per 1,000 inhabitants; 10.11 in 1880, and 8.81 in 1890. It is doubtful if the death rate in Ohio is ever as low as 17 per 1,000. It is always higher than this in European countries, and in our own states where anything like accurate registry is made. Judging by the death rate we see that at least 40 to 50 per cent. of the deaths in Ohio are not returned by assessors.

The birth rates the same years were 22.95 in 1870, 19.52 in 1880 and 18.37 in 1890 per 1,000 inhabitants. This is a much better showing as to the proportion registered, but still far from correct, as our birth rate is probably not below 27 or 28 per 1,000, and possibly higher. It this is correct there are not less than 25,000 births omitted by assessors each year.

That the vital statistics registered in Ohio are almost without value is known to all who have looked into the matter. This fact is well recognized by probate judges, and has been commented upon in reports of different Secretaries of State. In 1881, Hon. Charles Townsend, then Secretary of State, said in his report, "I regret to say that many of the statistical tables are unsatisfactory and incomplete. The defects are mainly attributable to the imperfections of our system of collecting statistics." Soon after the creation of the State Board of Health a conference was held with Hon. J. S. Robinson, then Secretary of State, in regard to the registration of vital statistics, and as a result his report for 1886 contains an able and earnest plea to legislature for the remodeling of the laws regulating this matter. But reports to legislature are seldom read by members of the General Assembly, and as no bill for changing the system of registration was offered at that time, nor has been since, the subject has not been fairly brought before them.

Enough has been said, I trust, to show that the present system of collecting vital statistics should be abandoned, but it is much more difficult to propose a system that should and could, with any probability, be substituted. The real difficulty underlying the whole matter is the ignorance and indifference of the people in regard to it. If they fully realized the importance of being able to prove their own identity and the legitimacy of themselves and their children, and really believed that to properly register all deaths would result in lessening sickness and death among them, there would be little difficulty in finding means to collect and register vital statistics.

Two plans are usually tried—by providing penalties and by offering rewards.

Where public sentiment is strongly in favor of registration, penalties may prevent failures on the part of those required to report and keep registers. Penalties are in force in Ohio but are never enforced. If the probate judge is not satisfied with the returns of the assessors he may require the county auditor to withhold his order for compensation until they are made complete. The probate judge of Cuyahoga county tried this a few years ago, and the assessors were required to go over their districts a second time, but they failed to make any material improvement in their reports. A more direct penalty system is in force in Hamilton county. Here physicians, midwives, clergymen and sextons are required to keep a register of births, deaths, marriages and interments, and report quarterly to the probate judge. A fine of ten dollars is the penalty for each neglect, one-half to go to the informer. This plan is also a failure. The probate judge of Hamilton county, in a letter to the Secretary of State said, "very few persons who are required by law to do so, make reports of births and deaths to this office. It has been our custom for several years past, to frequently notify physicians, midwives, ministers and sextons of the provisions of the law, and the penalty for neglecting to report. Thousands of circulars, blanks, notices and requests have been sent out to persons whose duty it is to report to this office, and the total results of all our labors are embodied in our reports to you." These were very unsatisfactory.

But one plan has been found practically successful for securing the facts in regard to a death, and that is to require a permit for burial, and to obtain the desired information before granting the permit. This system of burial permits is enforced in most of our large cities, and in many of the smaller ones, and has also been put into practice in several of our states. For obvious reasons the granting of burial permits should be in the hands of the boards of health, and I would recommend that some plan as the following should be tried in Ohio:

Make the health officer or clerk of the board of health the registrar; require a permit under penalty, for each interment or removal of a dead body; require the physician to certify to the cause of death and the undertaker or friends of the deceased to furnish all other information to be recorded. The State Board of Health has been given the general supervision of vital statistics, and it would possibly be well to give to its keeping the Bureau of Vital Statistics, requiring health officers and clerks to furnish monthly reports to that board. The State Board of Health has prepared a bill providing that each municipal corporation shall establish a board of health, and that the trustees of each township shall constitute a board of health, with the township clerk as health officer. If this is enacted into a law, it would be possible, in my judgment, after a year or two of trial, to make a fairly accurate registration of deaths; and I believe the health officers would willingly do the work if all the blanks and record books necessary were furnished them. This plan has had practical trial in several states and has worked well.

It is much more difficult to make a complete registration of births. Penalties for not reporting births are seldom or never enforced. The best reports are made in the states that pay for this work. The fee for reporting births in the states varies from 5 to 25 cents; for recording births from 3 to 50 cents. Massachusetts pays the highest rate, giving to physicians and midwives 25 cents for reporting each birth, and 50 cents to registrars for recording each birth. At that price, it would cost in Ohio, if every birth were reported, about $75,000 annually for the registration of births alone. We may not hope for such liberality in Ohio for many years to come. But there is another form of compensation Ohio could make to physicians that would possibly induce them to furnish reports of births without fees, and that is by restricting the practice of medicine to properly qualified persons. Physicians and midwives might then be required to report all births, which should be done monthly to health officers or clerks of boards of health. The latter should be paid a fee for recording births reported, and an additional fee for obtaining and recording births not reported by physicians and midwives.

All marriages should also be reported to health officers or clerks, as it is desirable to have all records relating to births, deaths and marriages kept in the same office in each town or township. A fee should be paid for recording each marriage. Annual reports of marriages and births should be made by health officers and clerks to the State Board of Health.

The plan suggested offers the following advantages:

Records of death would be made before burial, the cause of death being given over the signature of the attending physician. Reports of deaths for the whole State would be made monthly instead of annually.

The record of a birth, death or marriage would be made in the neighborhood where the event occurs; the registration would be in the hands of those most interested in the work; provision would be made for the continued existence of a board of health in each city, village and township, and the health service of the State would be placed on a broader as well as a higher plane.

The Chair—Gentlemen, you have heard Dr. Probst's paper. Discussion will now be in order.

Dr. Buechner—I think it would be very desirable if laws of that kind could be enacted. During my administration as health officer in the city of Youngstown, before we had vital statistics there, I received many letters from different parts of the United States, from England, from Ireland and from Germany, making requests about the death of persons, and about the marriage of persons, and the claims of heirs, etc. Once in a great while I could find from an old undertaker some statistics; sometimes I found something in the Probate Court, but very frequently I could get no information at all. I know from personal experience those reports are worth nothing. I have compelled, or had the board pass resolutions compelling our undertakers before we issue permits for burial, to report every Saturday every death they have attended in the city, and I think I have kept for years a very accurate list of all the deaths in our town. Where I compared my statistics with the reports of the assessors of the Probate Court, there was not one single ward that corresponded with mine. I had more in every ward, and sometimes twelve or thirteen in a year more in one ward. They are taken very poorly; assessors are careless; they are paid $2.00 a day, and they don't care if they inquire in a house whether anybody died or not; because I caught them right in a house, and gave them fits for it too. I asked them, "Have you got anybody down in that house?" I said, "You know somebody died there." I would not give anything at all for a report of that kind. Every undertaker in the city of Youngstown now has to fill out a certificate; on his certificate is the certificate of a physician that he has to go and get filled out. He has to deposit that in my office before he can get a permit for burial. If there is a person buried in Youngstown, a case of disinterment, or a corpse brought from another city, they have to bring that to me before they can get a permit. On the first of every month our physicians and midwives have to report every birth to me, but that law is only recently enacted, and I can't speak yet as to how it will work. I had my blanks for births printed for every month in the year, and I send them to every doctor, with stamped envelopes, and I require them to report to me.

Dr. Reed—The paper read by Dr. Probst was certainly one of very great importance, and on a subject which we must all admit is of very great importance in Ohio—the question of vital statistics. There is no question but that the general method in use in the State of Ohio is absolutely worthless; we might just as well have no method of collecting vital statistics at all, as the one we have at present; and if the plan suggested by the doctor could be adopted in the State, and could be made a State law, there would be some value in the statistics that would be obtained. In reference to the methods suggested by Dr. Buechner, of

Youngstown, we have practically the same thing in Mansfield. We do not allow an undertaker to bury a person without obtaining a permit. Where, for good reason, as in contagious diseases, they must bury the person very quickly, and are unable to get a certificate from the physician on account of his being out in the country, they may come to me and make a report verbally and I allow them to proceed and bury with the understanding that they must return this report from the doctor within a certain time, and they go on and bury and bring me the report. I hold them personally responsible for that, and I have no trouble in getting it. I think there has not a death occurred in the city of Mansfield during the last two years, of which a report has not been returned to the health department. When persons die suddenly, with no one in attendance, I go and obtain all the facts, and make a report to the health department, such as would be made by a physician; and if it is necessary to have a post-mortem, I go to the coroner or to the prosecuting attorney, and state the facts, and a post-mortem is then ordered by the prosecuting attorney or coroner as the case may be. I obtained very valuable information in regard to births from a prominent Catholic priest, who said that they take charge of or look after the average number of births in their congregation during the year. Now we all know, if we know anything about the Catholics at all, that they are very strict in reference to abortions, and rightly too, and to watch this, they write up the number of marriages that occur in their church every year, and they arrive from that at the average number of births that should occur in that church; I believe the average in this city that I talk of was five births to every married family. Now, how many families have five children on an average among people generally? How many families that are married have abortions produced? I don't pretend to answer that question, and I don't suppose you can, but the facts are that we have thousands of abortions producded in the State of Ohio every year, and that, as a matter of course cuts down the number of births. We can adopt some plan, I think, by which we can get the physicians to return the births as well as the deaths. They return the deaths, and why should we have any more trouble with birth certificates than with death certificates.

Dr. Scott, Loudonville—Mr. Chairman, with reference to the matter of vital statistics, I probably would differ with some, inasmuch as I would pay very little attention to laws enacted for that purpose. There are a great many things that we require but very little law for; each man should be a law unto himself. I have practiced medicine for forty years, and I have always kept a register of all the births and all the deaths, and while it has been some trouble, and we often complain about making reports for which we are not paid, yet I think after forty years experience that it has been more benefit to me than all the trouble it has cost me; and if each individual, each practicing physician, would discharge his duty, and where my duty ceases my brother's commences, by that means physicians could regulate the matter of vital statistics very largely. We would find that if each one of us would attend to his individual duties that it pays just about as well as the average professional duty, and it will have good results; and I believe that the medical profession should discuss this as concerning them individually, and not urge the passage for enactment of special registration laws.

Mr. Cline—Mr. Chairman, we furnish a physician with a postal card so that when he sits down to his desk he can reach into a pigeon hole and take out a card, and write down the number of births in the last twenty-four hours, throw it in the mail box, and let it go; and when he says he can't do that for nothing, I will say that I am perfectly willing to divide pro rata my salary as a member of the board of health. This matter of statistics is a very important one. My attention was called to a case last week. We have a truant officer in our town. Last week he stepped into one of our shoe factories and found a boy who looked to be under age; the boy said he was 14 years old, and more. He went to the school superintendent and found that the boy was not that old, so he told him he must quit working and go to school. That brought the mother after the truant officer, and she said "that boy is 16 years old and he must work there." "Well," he says, "how do you know he is 16 years old?" "We have got the record in the Bible." "Well, I'll go with you and look at it." He looked at the record and found that the boy was not that old, according to the record. "Well," says she, "that is a mistake, a mistake of the record." She said he was 16 but the book said he was only 14. In glancing over the record he struck the date of the marriage, and according to her theory the boy was born a year before they married, so she gave it up and said she guessed the book must be correct.

Dr. Reed—Mr. President, I would like to ask a question. I believe, (probably Dr. Buechner can tell me,) that there is a law in Germany that compels the parents or parent to return the name of the child within a limited time after the birth has occurred, and if that was added as a part of our law, it would aid in making a check against the doctors who return the births.

Dr. Buechner—Physicians are not required in Germany to report the births, but the head of the family is within a short time after—I don't recollect now how soon; but he is compelled to report to the preacher, and it is a little more simplified there. We have very correct statistics in regard to births there, and they are all reported to the preachers of the different denominations, but I don't think such a plan would be practical here at all.

The Chair—We have a little time yet, and if there is no further discussion of this paper, if we might have any voluntary paper we would be glad to hear it.

Mr. Cline—Mr. President, we have one thing that is giving us considerable annoyance. I speak of the hogs. Two years ago, our board of health passed a sweeping ordinance saying that after a certain time no hogs would be allowed within the city limits, and at the expiration of that time there was not a hog within the city limits, except in the hands of one party. He had some five or six hogs. The neighbors around chipped in financially to assist him in fighting it. We arrested him for maintaining a nuisance. We tried it in our mayor's court and we gained it; they appealed it of course. We fought it step by step along. They carried it to the Common Pleas Court and we gained it: then they carried it to the District Court and there three men, sitting upon the bench, reversed the decision of the other two courts; then we had lost it. Then our city council in a body said, in a communication to the board of health, we will not be responsible for any expenses incurred in carrying this case any further. At the time of the decision of this District Court there was not a hog, outside of these, within the city limits; but within twelve hours after this decision, I think I am safe in saying that there were 200 hogs within the city limits; and to-day I can much easier tell you the number of inhabitants in the city than the number of hogs, and yet I don't believe they differ very much. Now, what will we do? We made the fight. I want to make this point, though, right here; at the time this case was brought up, misfortune had not struck me quite so strong, and I was not a member of the board of health; had I been I think I would still have been praying or fighting to get that board of health to carry it on to the higher court; not stop where they were, but carry it up. The decision of this District Court was that it was unconsitutional; that you had no right to say that a man could not keep a hog in the city limits; or in other words, you had as much right to say that a man could not keep his horse within the city limits. I feel sorry for a man who would for a moment compare that noble animal, the horse, with a hog, but they did it nevertheless. A horse can be kept clean and he looks bright and nice. Take a curry comb and curry him up and he is all right. You can take your scrub brush and soap and scour for an hour on a hog and bed him down in the softest bed you can make and add to it a good sprinkling of Colgate's perfumery, and in a few minutes he will outstink anything. He is a nuisance continually. He is a nuisance *per se*. Now I have noticed in the reports of some of the boards of health that they have passed these sweeping ordinances, and I understand with effect. How do you do it, I want to know? We have one man now who has a lot within the city limits, almost in the heart of the city, forty feet wide by one hundred and sixty feet deep and thirty-two hogs on the lot. Another one has sixteen. Great God! when the hot summer suns of '92 come down on us, what are we going to do?

A Member—Hold your noses.

Mr. Cline—Yes, that is true, we will have to hold our noses. I would like to hear from some of these people that have these sweeping ordinances on the books, how they do it and where they get their backing. If there is a law that backs them up, I want to know where it is.

Dr. McKee—We have had a great deal of trouble in our town with the hogs, and I made up my mind that I would go to our representative, and go to the adjoining county and have them instruct their representative to give laws on these subjects; and I believe we can accomplish work in this way that we cannot in any other way.

Dr. Buechner—Mr. President, I do not think, according to the best legal information that I can get, that you can pass a sweeping law forbidding hogs to be kept in cities. That is what our best attorneys informed me there. They say the only way you can abate a hog stable is, if it becomes a nuisance, to declare it a nuisance. My honest conviction is that every hog pen is a nuisance. We had an ordinance passed by the city council forbidding the keeping of any hogs nearer than 101 feet from the nearest dwelling, and under that ordinance a good many were removed. This fall the council passed an ordinance that did not make the distance a condition at all, but said they could not keep a hog except that they would keep not more than one hog in a pen, and to do that they had to get a permit from the health officer; but the health officer being opposed to hogs has not given permission to anybody, and we haven't got any hogs there now.

Dr. Fisher—We had the same trouble in Toledo concerning hogs about ten or fifteen years ago, and the board of health declared the keeping of hogs in a certain limit of the city a nuisance, and defined the boundary. The people then quit keeping hogs in that locality, upon being notified by the sanitary policeman. A few years afterward, that resolution was modified in this way, that no person was allowed to keep more than two hogs in a certain limit, and after awhile that was fixed at one hog, and that was optional with the health officer as to whether he gave them a permit or not. We have very few hogs in the city now. We don't grant any permits at all. I have not issued one in a year.

Dr. Church—The keeping of hogs is quite a serious question. In our little city of Salem, about a year ago, the council passed an ordinance saying that no hogs should be kept within the city limits, except by permit granted by the board of health; they left it entirely to the health officer, and the board immediately decided that no permits should be granted to any one in the thickly settled part of the city, but only on the outskirts. They were allowed to keep a few hogs. We had very little trouble with the people in regard to moving their hogs, and I think it was only necessary to bring one man up, and he promptly succumbed. He came from a neighboring town where they allowed him to keep hogs and he declared that Salem could not prevent him. We gave him an opportunity to take out his hogs without trouble, but he wouldn't do it.

He was arrested and brought before the mayor. He was advised to plead guilty. He did so, was fined a small sum and the hog was removed the next day. I think if you travel over our city, the only hogs you will find are away on the outskirts where they interfere with no one.

Dr. Probst—Mr. President, I consider it unfortunate that Mr. Cline has sprung the question of hogs at this time when Mr. Hunter, who was here last year, and produced a very able paper on the hog pen nuisance, will be here at our next session. He is a lawyer, an excellent lawyer, and he ran the hogs out of Warren. I am very sorry that this talk has not been reserved until Mr. Hunter gets here. He could answer any questions in regard to the legality of prohibiting hogs within corporate limits.

Mr. Cline—Mr. President, I move you that the further discussion of this matter be postponed until Mr. Hunter is here.

The motion, being seconded, was carried.

Adjourned.

SECOND SESSION.

THURSDAY, 7:30 P. M., *January 28, 1892.*

The Convention was called to order by the Chair, who said:

"It is time for the opening of our evening session, and all who have reported since our afternoon session are requested to register on this tablet. The first thing on the programme will be a paper by Dr. Thomas C. Hoover on "The Prevention and Restriction of Contagious Diseases."

Dr. Hoover—Mr. President and Gentlemen: What I have to say on this subject is not worthy the title of a paper, and what I had mentally planned to discuss to-night has been in a very great measure gone over in the discussion this afternoon. I am very glad that it took place as it did. It properly came up in that connection and it does not bother me in the least—rather pleases me—that I am able to cut down what I have to say to rather small compass. The subject as announced on the programme is a practical one and its thorough discussion in detail would involve a great deal of time. It is pretty generally recognized among health authorities that there are certain diseases which we can to a greater or less degree control—in a great many instances prevent, and I am one who is radical enough in his faith in the measures at our command to believe that some of these diseases could be practically stamped out if the proper means were resorted to and persistently followed. I believe that that will be admitted by all who have given this subject careful consideration. In the means as provided by local organizations for the prevention and restriction of the disease, there seems to have been a great variety of methods of application, and therein I think lies the difficulty. That is the cause of their not being efficacious in many instances. In most towns, under the direction of local boards of health, when contagious or infectious diseases are reported, a placard is placed on the house and that is as far as the attempt to prevent or restrict the disease goes; that serves as a warning to those outside that inside of the building is a dangerous disease, and that if they enter they may contract it. We all know that there is no virtue in a placard; that it is a warning to keep people out, to keep them from exposing themselves to the contagion, but unless it is carried further than that and properly carried further than that, very little has been accomplished. That may protect some from the contagion, but we will permit others to expose themselves and permit the disease to be conveyed to other localities by neglecting the means that are properly within our reach. Now, after making a brief statement in preface to this effect, I want to say that I am an advocate of having all these means, the means for the prevention and restriction of disease, in the hands of local health organizations and having them used systematically. I was not aware until this afternoon that several local boards of health in the State are using the very plan that I proposed to suggest to-night and urge the local boards to adopt. It is used in foreign countries and has been for a great many years with excellent results, and from the reports made by several local boards in this State this afternoon, it has been used by them with good effect. My plan is that the local board of health should have control of all houses or rooms in which contagious or infectious diseases have occurred. That the board should not be satisfied with placarding a house and delivering into the hands of the family an essay upon the means of preventing or restricting the disease to be used according to their interpretation, but that they should have a properly qualified representative, whose business it should be to carry out these means—a disinfector, if you choose to call him such—whose duty it shall be to take charge of the premises on which there has been a case of contagious disease and to see that those premises are disinfected. That is the substance of what I want to recommend. There is a great difference of opinion as to what disinfection means. In the first place, you cannot disinfect anything that is not infected, so that it is implied that when you undertake to disinfect, that there is a poison present, whatever it may be, and that that must be destroyed. If it is a living poison, an organism, that it must be killed. Those of you who are physicians –and most of us here to-night are—know that in the early days of antiseptic surgery our faith was implicit in the effect of carbolic acid and there are very few of us now that have very much use for carbolic acid as a disinfectant. A disinfectant must possess certain qualities. It is not a deodorizer. It does not mean that it will simply kill the foul smell, but it must kill the disease germ, whatever that may be. It must be a germicide, short of that it is not a disinfectant. The very best disinfectant that we know, the one that I believe to be the best, the bichloride of mercury, is not a disinfectant unless it is properly applied, unless it is used in sufficient strength and for a sufficient length of time to thoroughly kill the germ. It can be used in a weak solution and used for an indefinite length of time and yet the germ may survive. So that there are a multitude of conditions that must be fulfilled before the premises or material, clothing, or a person, is properly and thoroughly disinfected. For this reason it seems to me that the necessity of having a properly instructed person, an officer who has no interest in it further than to see that the work is thoroughly and properly done, whose business it is to do this work. He takes charge of it officially. He cannot be interfered with by anybody outside of the board of health. He must obey their orders implicitly. Physicians are not above mistakes with reference to the use of disinfectants. I know a very excellent man, a man of unquestionable ability as a practitioner, of large experience and many years practice, who recently, in a case of diphtheria, directed the family to keep sulphur burning in the house all the time as a means of preventing the disease from spreading. Now we know that that is utterly futile, worse than that, it is absolute discomfort to the persons who were compelled to live in a sulphurous atmosphere. The use of disinfectant solutions, without any positive knowledge as to their strength, mixing them after a haphazard manner and applying them in the same way, is worse than useless, because it leads people into a feeling of safety when they are in as much danger as ever. I believe that this could be done by all local boards of health, and the fact that it has been already adopted by a few is argument sufficient to prove that it can be done by each and every one. I firmly believe that if a systematic effort was made in this direction, and if such officers were appointed, after being thoroughly qualified in the use of these agencies—and I have not gone into detail because I do not think it necessary—and if these should be applied in every instance where a contagious or infectious disease occurs, that a great many of these cases could be prevented and a great many lives thereby saved. I don't think it is necessary for me to bring any proof in behalf of the efficacy of sanitation in general to this body. You all know its value. I know that one objection to this will be the expense that is incurred. If I could have this plan carried out according to my ideas, I would advocate that all of the expense connected with the disinfection of property, that is, to whatever extent it may be necessary in connection with any case whatever, should be borne by the local board of health; that is to say not only the materials that are used in disinfectation, aside from the services of the officer, but for the destruction of clothing or household goods, or furniture; that the individual should be compensated for the loss out of the sanitary fund. There are oftentimes poor people who can ill afford to lose a few dollars worth of household goods and I believe that the richer portion of the community could well afford to compensate them for the loss in securing additional immunity from contagious and infectious diseases. At first I believed that this might aggregate a considerable sum in the course of a year, but in time it would dwindle to an insignificant amount, because I am quite confident that most of these cases could be prevented. I don't believe in the old idea that children must have all of these diseases. If it can possibly be prevented, I think it is a great deal better. Now, Mr. President, we all know that the value of human life and the cost of sickness and suffering have been reduced to dollars and cents, but I believe it would be of doubtful propriety to advance any such argument before a convention of sanitarians. I think they fully appreciate that, but I believe that we could use that argument effectively among the laity, demonstrating to them what the worth of a human life was, and the value of the time that was lost in the care of the sick, I believe we could demonstrate to the laity that it is much cheaper to pay for prevention than to care for the sick and bury the dead; that it is true, according to the old adage, that an ounce of prevention is worth a pound of cure.

Mr. President, I believe that is substantially all that I have to say to this meeting, and I would like a free discussion as to the feasibility of adopting a general rule by the State Board of Health requiring the appointment, by the local boards, of a disinfector, whose business it shall be to carry out these means of prevention.

The Chair—Gentlemen, you have heard the remarks of Dr. Hoover, and he has presented some matters that are of very considerable importance to all health boards. It is open for discussion.

Dr. Conklin—I am very glad to observe that the Doctor has made particular mention of that point. We were striving to-day to get the difference between a deodorizer and a destroyer, and his thorough manner of explaining the point I was very glad to see, and his remarks were well timed, and I think very good advice to all the members of our local boards of health.

The Chair—The object of these meetings is to draw out opinions and we would like to have a full discussion of such subjects as this.

Dr. Carrothers—Mr. Chairman, I would like to inquire of Dr. Hoover if this is a new office to be created, this disinfector, or is it to be done by sanitary policemen. You know our councils are sometimes opposed to it, especially when we adopt any measures that there is no law for. I wanted to inquire if he would be designated as a sanitary policeman.

Dr. Hoover—Mr. President, it does not make any difference to me what you call him. I think the point is well suggested, and that it would be proper, and meet with less opposition if he was called a sanitary policeman. I would not have any objection to a sanitary policeman doing the disinfecting, provided he was thoroughly instructed, but I think that one sanitary policeman should be detailed for that special work. I had a little experience with a sanitary policeman once. I had a case of diphtheria in a house where there were two other children, and after the case was convalescent and when I had decided to disinfect the house, or have it done, I gave the lady of the house instructions how I wanted that disinfection proceeded with. She requested me to send her some one that could do it for her. Well, we have a board of health in the city here. It just occurred to me that probably one of the sanitary policemen would be the very man to do that work. I made calculation of the cubic feet of air space in the room. We had the room prepared for it when the case first came down. I estimated the amount of sulphur that I wanted used, and the amount of the bi-chloride solution and the strength of it, etc., so that all he had to do was to carry out my instructions. I don't remember how much sulphur it took now—somewhere about 16 or 17 pounds of sulphur—and I saw him along in the afternoon and he told me he had been there and he was through. He had commenced about ten o'clock. Oh, he said, I smoked it up good. You could cut it with a knife. Well, I asked, you used all the sulphur? Well, no, I didn't use all the sulphur, I didn't think it was necessary. So you cannot de end upon the average sanitary policeman. You must have a man who is especially and specifically instructed, or else your disinfection will not be thoroughly done; and if it is not thoroughly done, it had about as well not be done at all.

Dr. Rardin—In Portsmouth we have met with this difficulty from beginning to end. We find that there is a great amount of ignorance among the laity in regard to the nature of contagious diseases, and not more than one-half of the people know that scarlet fever and scarlatina mean the same thing. Only a short time ago a lady said to me: "We didn't have any scarlet fever last year at all; we didn't have anything but scarlet rash." In the matter of disinfection we have found it difficult to impress upon them the importance of disinfecting. When a case is reported to us, a placard, with the pamphlets which the State Board has generously provided for us, is sent to the house. The placard is put up. One of these pamphlets is left at the house and one at each neighbor's house. They are given their instructions that they shall not approach the sick room; those going out of the sick room should not go in and out of the house, and isolate the case as far as possible. We give the people to understand that disinfection is to be done under the direction of the sanitary policeman. Only a short time after I first began to act as health officer, I made inquiry if they had made disinfection. "Oh, yes." "Well, how did you fumigate?" "Oh, we burned sulphur." "Well, did it smell bad?" "Why, yes, somewhat." "Drive you out of the room?" "No, it didn't drive us out of the room?" Well, now that is about the idea the average layman has of disinfection. They call that fumigation or disinfection. But we have come to a point now where, when a case is convalescent, we leave a postal card for the physician to sign when the convalescence occurs. In a day or two a sanitary policeman calls and asks when they will be ready to fumigate, and when they are ready the sanitary policeman goes and sees that the fumigation is done according to our directions, and I am happy to say that I believe we are getting good results from it; that cases are growing less. In fact the number of cases of diphtheria and scarlet fever in our city is not nearly so large as it is in other parts of the State, and I think that it is not increasing any.

Dr. Probst—Mr. President, I think that Dr. Hoover's suggestion is an excellent one, and that it should be acted upon by our local boards of health. We certainly know it to be a fact that the infectious diseases, scarlet fever and diphtheria, are spread by contagion and infection, and we are able by proper disinfecting methods, to completely destroy the germ or poison upon which these diseases depend. I know from observation in passing through various towns in the State, that but very little attention is given to this subject by local boards of health. As a rule, they are content to placard the house and depend upon printed instructions left with the family for proper disinfection. The matter of disinfection requires intelligent attention, and the average layman is not able to properly disinfect a house. There may be some here who are not familiar with what is done in European cities. I will mention the city of Glasgow especially, where much attention has been given to this matter, and where they have a most admirable system for the control of infectious diseases. The city has provided an infectious disease hospital. It has been an object to make this a very pleasant place, well situated, and as soon as a case of scarlet fever or diphtheria, or other infectious disease is reported to the board of health, there is immediately sent to the house a conveyance from the public health department; and if they have no proper means of isolating the case at that house, or if the parents, in the case of a child, prefer, the sick child is immediately taken to this isolation hospital, where it receives the best of treatment, while this relieves the other members of the household from any quarantine measures that might have to be instituted in case the child was left at the house. Immediately, (and where the child has been left at the house, as soon as the case has been reported well by the physician), a wagon is sent there from the health department and everything is removed that can be taken from the house in that way. All infected bedding, clothing, carpets, and everything of that kind is put into this wagon and taken to the central disinfecting station, where they are thoroughly disinfected by steam or other means. For poor people, where it would be impossible to disinfect the house while they were living in it, the city has provided a very commodious and well planned house where the family may be removed and boarded for twenty-four or forty-eight hours, as may be necessary, at the expense of the city. Then the health department thoroughly disinfects the house. They then replace their carpets, clothing, etc., after they have been disinfected, and the family is allowed to go back into the house; and the department feels sure that this will not be a centre of infection from which other cases may arise. I think that plan might be well carried out by our large cities. In the smaller cities, and especially in the villages, there may be some difficulty in regard to the disinfector, as Dr. Hoover calls him. Most of these towns have no sanitary policeman and the entire duty of looking after these cases depends upon the health officer, who is usually a physician, and who receives the magnificent compensation of an average (taking our villages of 800 to 1,000 inhabitants), of about $25 to $30 a year. Well, a physician, as a rule, is not willing to spend his time for any such sum as that, in looking after the disinfection of houses There might be some practical difficulty in regard to it in small towns, but in larger towns it certainly could be and should be carried out.

The Chair—Are there any further remarks? If not, we will proceed to the next subject—

WHAT PRECAUTIONS SHOULD ATTENDING PHYSICIANS BE REQUIRED TO TAKE TO PREVENT CONVEYING INEECTIOUS DISEASES.

By T. T. Church, M. D. Health Officer, Salem, Ohio.

Certainly if the length of titles bears any exact relation to the length of the papers written after them, this paper should stretch out until the wee small hours of the morning, and as this paper is the last on this evening's programme, there is no reason why it should not be lengthy, except that I do not want to impose on good nature, and am anxious to hear this subject thoroughly discussed, as I think much more good may be accomplished if each one present who has a good idea on this subject can be allowed to present it.

On first glancing at the topic, my answer, in a few words, was, he should be required to do everything in his power, according to the lastest advances in medicine and sanitary science, to guard the lives and the health of every one, even of the humblest, and meanest member of the community in which he lives.

The physician's calling is, in my opinion, the noblest and best in which any man may engage. The minister is received into the household and gives counsel, aid and advice in regard to all spiritual matters, in so far as they are confined to him; the lawyer is consulted when temporal matters have become tangled up, but the physician has the opportunity of helping, not only physically but spiritually as well, and if the house contains a skeleton, no matter what its cause or what its nature, sooner or later in all its naked ugliness and repulsiveness it is exposed to the physician's gaze, while carefully concealed in the background when others call, whether minister, priest, or friend.

In the life of a busy physician it is an occurrence of almost daily repetition that he enters a home and before leaving must assure the household that the sick one will in all human probability, return to a state of health, or in the course of the disease, die and leave them. The sick one may be the support of the family, a short time before strong and well, bearing cheerfully the burdens imposed upon him and making sunshine all about him, but soon to be taken away, leaving those dependent on him to struggle on as best they may; or the sick one may be an only and dearly beloved child, in whom all the fond hopes of the household are centered, and for whom each and every member is willing to do anything possible who is slowly and surely slipping away or burning up with fever and tossing wildly in delirium.

Are these pictures sweet to contemplate? Does it make us cheerful to say calmly, we have done all we can and your beloved one must die? Or does it give us a self-satisfied feeling when we consider that possibly, through some carelessness of ours this one must die—some one who has confided all that life holds dear to our keeping and we have proven false to the charge? A physician is not infallible and is liable to make mistakes, but some mistakes are nothing short of criminal. Any man engaged in the practice of a science which deals with the life of a fellow man, should be held to a strict account as to the disposition of his time, and should not use any of it in such a way as to interfere in any way with his becoming a master of his chosen art.

How often, in reading accounts of epidemics, do we find that all the first cases fell to the care of a certain physician, or that they seemed to follow him up wherever he went, as sometimes happens with puerperal fever.

Frequently in attempting to carry out some new idea in regard to restricting the preventable diseases all sorts and kinds of opposition will be encountered, and from people from whom it would be least expected. Among the latter number, physicians will gravely tell you that diphtheria cannot be carried from one person to another, and that there is no harm in having public funerals, the death being caused by this disease, all the evidence to the contrary notwithstanding. When physicians teach such doctrines is it to be wondered at that the laity are not very particular about coming in contact with the infectious diseases? Your remarks to a household as to the contagiousness of any disease lose much of their force and effect, and often they think you are only guying them or have some pique against them, or are trying to get even with them for some past score, when you tell them to be exceedingly cautious in their management of a case, and then they see you or some other physician coolly walk into a sick room, examine your patient, prescribe, and then without thought, apparently, of washing your hands or disinfecting any part of your person or clothing, go on your rounds and continue making visits as though no one on the list was afflicted with anything worse than colic.

All advances in sanitary science come slowly, and in this particular regard the physicians are the most in need of being well educated and keeping themselves posted in all the latest discoveries in regard to the contagious principles of disease and the best methods of destroying them, but as long as human nature remains as it now is and physicians wish to make an impression on the community which they do not rightfully deserve, many simple cases of disease which, if let alone entirely would recover in a few days, aré diagnosed as diphtheria, scarlet fever or whooping cough, and then as they suddenly recover as according to the nature of the cases they should, the physician covers himself with glory and tells the household that it will not be necessaay to do much disinfecting as the disease was so promptly stopped that no contagious or poisonous principle was developed. Truly there is no danger in these cases, but their influence is decidedly pernicious.

In this State, to the best of my knowledge, there is but one disease which the people dread enough to be willing to take any precautions against it and frequently they go to the other extreme and in their efforts to protect themselves lose all trace of reason, and act with as much sense of the fitness of things as a herd of stampeded cattle. In the case of small-pox it is something unusual to find those who are unwilling to be careful in its management, and it is more common to find people so anxious to escape it that they cease to be sane, and if the physician is not willing to be careful the people take the matter into their own hands and the physician's business falls off very materially; and thus, through his pocket-book, the most sensitive part of his organism, he is taught to be careful.

It effects a great saving of life, and of suffering, and of misery, wherever the prevalence of infectious diseases is restricted, and as long as parents think it the proper thing for their children to have the measles, and purposely expose them to the contagion, just so long will we have to record deaths from measles and resulting evils, either as the direct or indirect cause of the fatal ending. As long as the parents think there is no harm in the whooping cough, and allow their children sick with it to play at home and in the street with other children, just that long will we have an active predisposing cause to serious lung disorders.

With scarlet fever, people are a little more careful, but not so much as they should be. With diphtheria the sentiment is not so strongly pronounced and some can be taught to be careful, while others, in spite of all caution and advice to the contrary, permit the well children to go into the room and see the sick one, especially if the attending physician has given an unfavorable prognosis. As to typhoid fever, little need be said on this subject, as I do not believe, according to our present knowledge of this disease, that a physician can carry it from one person to another.

In thinking of the title of this paper—what precautions should attending physicians be required to take to prevent conveying infectious diseases, the idea struck me, it might be a good plan to interview a few physicians and learn what they did do, so I resolved myself into that crooked little thing that asks questions and called on some of my friends for information as to their habits. Small-pox is of uncommon occurrence in our neighborhood, so nothing was said about that disease, but they all agreed that in their care of scarlet fever and diphtheria, they came in contact with the sick one or anything contaminated by his touch, as little as possible, and before leaving the house cleansed their thermometers if they had had occasion to use them, and their hands, before going on to the next patient; if the weather would permit it, it was also the proper thing to keep their outer clothing as open as possible to allow the fresh air to circulate freely through it; in addition to this, one physician said he was in the habit of sponging off his clothing with a disinfectant solution. These precautions are all good so far as they go, but they fall far short of the ideal and I hope the time is not far distant when each physician, in fitting out his office, will have built a small room in which he can thoroughly and effectually disinfect his clothing as often as it may be necessary and thus keep himself and his belongings pure and aseptic.

When the title of this paper was first given to me, the idea seemed to me to come with it, that I was to arrange a list of rules—such things as a physician attending a case of infectious diseases might be allowed to do, and such things he should not do, under penalty of the law, and I began thinking about it in that light, but the more thought I have given it, the further I have gone from the starting point until now I consider my first idea an entirely erroneous view of the case and that there can be no necessity for invoking the law making power to help us in this direction. Let us take one disease and consider the requirements made of the attending physician, when he has a case of small-pox to treat: In the first place he must give notice to the board of health that he has such a case, and further than that nothing is legally required of him, if I am correctly informed; but do you believe for a minute, that after he has given such notice, he would even think, let alone do it, of counting that case on his visiting list and calling there as he goes on his daily rounds, just as though it was a simple case of la grippe? Certainly not, but why not? Because the people, the power behind all laws and their life-giving force, have not taken the trouble to enact any laws on the subject, but have made an unwritten law, and as you know these unwritten laws often have more effect than any number of written ones, and have decreed that physicians must take unusual precautions in their care of such cases.

Whenever the people come to realize that more deaths are caused by scarlet fever and diphtheria than by small-pox, and that there is no need of their children having the measles, scarlet fever or diphtheria, then will the physicians be required to take more precautions than we now do and still there will be no necessity for any laws to be enacted stating what shall and what shall not be done for all that will regulate itself without the intervention of any legislation.

The Chair—Gentlemen, you have heard the paper. It is now open for discussion.

Dr. Stewart, of Cedarville—I was very much pleased with the paper, and I think his ideas are, in the main, correct; but I question the point that he makes about typhoid fever not being communicable by the physician. That, I think, is a point that might bear some discussion. The thing that I want to mention is, carrying food or paper or anything from the sick room to your own home or some other patient. Is it not possible that this typhoid fever germ might be upon this food or this paper? It is not anything unusual for a physician to have small presents to carry away, and I would like to have that point discussed a little bit further.

Dr. Buechner—Mr. President, I don't think that anybody quotes the opinion now that the germ of typhoid fever is contained in anything but stools. I have not seen anything lately contradicting that. I think if you disinfect the stools in every case of typhoid fever that you need not be afraid of carrying paper or food or anything of that kind.

Dr. Smith—Speaking of typhoid fever, I can see wherein the physician can be a grand teacher of the afflicted family. It has been my lot to treat a few cases of typhoid fever in my time. In the country practice, as a great many country physicians will bear me out, you sometimes stay for meals and sometimes you call for a drink of water or a drink of milk, and it has been my custom in the last few years neither to eat nor drink about the premises. I have been asked in the last few months by families having typhoid fever, "Why don't you doctors get typhoid fever? You certainly must take some medicine to keep it away from you." They always have an idea that the physician has some wonderful medicine that he can take himself and keep the disease away from himself, but he will not give it to them. I always try to be honest with these people. I tell them, if you follow the directions I follow you will not get typhoid fever in all probability. A gentleman came to me some time ago and said, "I am going to watch with a certain patient to-night, what shall I do so that I will not take typhoid fever?" I said, "Go there to-night and do as I do, and neither eat nor drink When it is put on the table about midnight don't partake of it, and I warrant you won't have typhoid fever," and I believe I am correct. As to that dreadful scourge, diphtheria, which we have been having throughout the State, and which we have had in our little town this year, I have had some lessons to teach to the laity, and they have been of this kind. They have seen that I have taken some precautions. I have frequently shown them what I did as a physician so that I would not carry it home to my own family, my own little ones. I have a long overcoat, a long ulster, and a top coat and vest, and an old hat. I had three or four very malignant cases to treat. Before I entered these families I put on these garments, and before I left the house I showed them a little bichloride tablet that I brought to disinfect my hands, and I took a thorough shampoo, and after I left I took these garments off. I always gave my head a shampoo and cleaned my nails very thoroughly and put on my other garments. Some will say that is not thorough disinfection, but it is better than nothing, and it taught these families the necessity of following out what the doctor did. I also wanted to speak of the diagnosis of cases. The responsibility of the physician in making a proper diagnosis of these infectious diseases is very great. I think physicians have a wonderful responsibility resting upon their shoulders. In the recent epidemic of sore throat in our town about one-half of our physicians declared it tonsilitis and the other half declared it diphtheria. Well now, we divided on that. If they died there is certainly some septic poison there, some diphtheria there, according to my views. Another says that people may die of tonsilitis, but when we look up the books we find that very few die of tonsilitis. I tell these parties that even if tonsilitis is not communicable for goodness sake let us take proper precautions and put up a placard on your house, and let us do all we can to stop these people from dying. Physicians sometimes make a wrong diagnosis. In the last week we have had some more sore throat and I, among the other physicians, could hardly make out diphtheria, but last week two cases died. I went before the board of health of which I am a member, and of which Dr. Jennings, of our town, is a member. I said, "Dr. Jennings, I have a boy attending school. I have another boy at home with sore throat. I look upon it as tonsilitis. I cannot make out diphtheria, but, to set a proper example, I will keep the boy at home. As a physician you sanction what I say and let us keep every one at home, out of school, where they are having sore throat at home," and we are doing it.

Dr. Love, Health Officer, of Shelby—With reference to the gentleman who was last on the floor, I wish to refer also to the responsibility of the physician as a diagnostician. A few weeks ago, and Dr. Probst will remember the case, a death from diphtheria occurred somewhere north of Tiffin. The child died from cardiac astheni, I understand, but the child had had diphtheria about two weeks prior to that time. Another family in the same neighborhood, and I believe in the same house, had what we diagnosed as scarlet fever. That family came in the vicinity of our place, to a small town, and there visited some friends. In about nine or ten days my attention was called to a family of three children, two of whom were already sick. On examination I made a diagnosis of diphtheria. At the same time a neighboring physician was called to another family, the family with which this former family visited. Their cases were diagnosed quinsy. This disease went through the family. It attacked every child in the family, and the youngest one died. In a few days longer, another family was attacked, and that family fell into my hands, which I diagnosed as diphtheria, and it was a severe form of it. I lost one in that family. Now this third family in this place associated with the family that had quinsy, but they were afraid to associate with the family that was in my hands, having diphtheria, and all of this third family had diphtheria with the loss of one. So there is the difference. One physician diagnosed quinsy though going through that family, and I believe that nearly all the gentlemen here will agree with me that quinsy is not communicable.

I differ with the doctor last on the floor with reference to tonsilitis, because I frequently see it arise in one child and in a short time another take it and even another ; but quinsy I never saw to occur twice in the same family in a short time. So there is an example in which this third family in this little town got diphtheria from a family where they had what was diagnosed as quinsy. In reference to the doctor carrying the infection : now when he starts out to visit a case, for instance diphtheria, probably he has three or four other cases to visit before he returns home. Then of course it is difficult to disinfect himself on the way. I have been moderately careful, but I will admit that I have not been as careful as I should. Thus far I have had the satisfaction of thinking, at least, that I have not yet communicated diphtheria from one to another, or any contagious disease ; but there is one thing I think I did do, several years ago. Some four or five years ago I was troubled in the spring with a cough for three or four weeks. It did not annoy me much. Occasionally I would cough, a sort of spasmodic cough, but I did not take any thought of my own condition and attended in the meantime several cases of obstetrics. Strange to say, the little fellows all had whooping cough. How did they get it? Did I have whooping cough and transmit it to them? That probably was the case, for these little children, who never went out of the house, were the first ones to get it, while other members of the family did not take it until afterwards. There was a case in which I probably transmitted whooping cough to several children. I did not notice it at all. I got free from it without any medication and have never been bothered since. Now, for instance, suppose we have a case of puerperal fever or erysipelas—I would like to get the opinion of the gentlemen here how long should a doctor remain away from the lying-in room after having treated a case of puerperal fever or erysipelas. It is my practice not to touch a case of obstetrics for at least two weeks after having terminated the treatment of a case of puerperal fever or erysipelas. Now, recently, I have treated a case of puerperal fever, and I have several cases of obstetrics that want my services, but I came off here feeling perfectly satisfied that I am not going to lose much for the simple reason that I won't go. They will have to do the best they can. I can't go near them. I would like to hear the opinion of the gentlemen on that subject.

Dr. Carrothers—In speaking of the disinfecting room, in the paper of Dr. Church, I do not fully understand his idea in having a small disinfecting room. Are you to disinfect yourself or your clothing, and is it by means of sprays or direct applications, or washing. I would like to hear from the gentleman on that. I believe that it is generally admitted that the germ of typhoid fever is derived from the stool, but in many cases where there is much delirium we may have some of these deposits on the bed clothing, and in handling the bed clothing, any one is liable to get these germs on the hands or under the finger-nails, and we may apply them at any time. That is we may swallow them. There are few doctors perhaps who have not at some time had some experience in carrying contagion. In fact, sometimes, the mistakes that we make are the mile-posts in our profession and put us on our guard. I know of but one case in which I carried contagion, and that was after I thought I had disinfected my person and clothing, but I had failed to disinfect a pair of gloves, and so simple a thing as that may carry the disease, and it was a very severe lesson. I remember a few years ago there was something of the sort in an article that was published about doctors conveying contagious diseases, and especially by long whiskers and long hair. I am glad to see that there are not a great many doctors here who have a long growth of hirsute appendage. I think they have paid some attention to that. In the case of puerperal fever, I don't believe that it is necessary for any stated length of time to elapse before going to the lying-in room, provided that one thing is properly attended to, disinfection. I think it should be thorough and complete. If done at once I see no reason why we should not go to the lying-in room the following day, for that matter.

Dr. Church—Inquiry has been made as to what sort of a room I would have and what would be the means of disinfection employed. My preference now would be for steam and super-heated air applied to the fabrics.

Dr. Hoover—Mr. President, I have listened for one means of carrying contagion from one person to another, and I haven't heard it mentioned yet, and I take it as a good omen. Probably it is not used by any of the gentlemen here. I refer to the little infernal machine that is exposed for sale in stores where surgical appliances can be had, a tongue depressor, a pocket tongue depressor, a convenient, elegant, easily applied little machine that can carry contagion enough for a thousand people, and carry it in the most virulent possible form. The danger of this was impressed upon me in the course of the discharge of my duties as a member of the board some time ago, by seeing it used by a practitioner in the examination of different throats, throats that were known to be diphtheritic, and throats to see if they were sore. It was not carried very far until I protested. I think one or two cases had been examined. I asked if that was the method that had been employed—if he was in the habit of using that tongue depressor? Oh, yes, he had been using that all the time, he had carried it for several years. I suggested the propriety of using something else. I believe that as a rule the profession has become better educated than that. Like the last gentleman that spoke, as far as the danger of carrying contagion from puerperal fever or erysipelas is concerned, I don't think any time need elapse; only a sufficient time to thoroughly disinfect, although I must confess that I feel somewhat like Dr. Love about these cases, that I would rather not see a case of obstetrics for some considerable time afterwards. There is a sort of horror about it that to me is unendurable, and the idea of conveying to a woman under such conditions the poison that may cost her life, is so utterly horble that, not liking obstetrics anyway, I would rather send some other doctor.

Doctor Stewart—What kind of a tongue depressor do you use?

Dr. Hoover—I use a spoon, sir, or anything but a tongue depressor. It is the easiest thing in the world to get a spoon. Almost every family has a spoon, and that spoon can be used and washed, and I would not use the same spoon twice—certainly would not use the same spoon on different cases. A spoon is a very easy thing procured, and a better tongue depressor than anything else that I ever saw.

A Member—How about the thermometer, doctor?

Dr. Hoover—Well, the thermometer can be disinfected.

Dr. Fisher, of Akron—I have listened this evening with a great deal of interest to this discussion. I have listened to a point made upon a matter of the diagnosis in diphtheria, scarlet fever, etc. Now I want to suggest a little point in the diagnosis of diphtheria or any throat affection. I think it is four or five years ago that I first began to use common salt. Whenever I struck a case of throat trouble of any kind whatever, I would say to the patients or parents, I would like you to use a teaspoonful of salt in a cup of water as a gargle. Use it several times and notice the effect upon the throat. If the membrane or substance that appears like a membrane to you is dissolved, you can rest assured you have not a case of diphtheria. I have never been deceived by that little test. In the matter of disinfection, as I listened to the discussion it appears to me that great stress is being laid upon the matter of disinfecting the patient and physician, and nothing said about the surroundings, the property about the residence. There, I think, lies one great source of the spread of diphtheria in which you could not, in your own mind, devise the cause. You could not think where the diphtheria originated, and yet, after tracing it up a little, you will find, probably, that two or three years before there had been diphtheria in the immediate vicinity and the germs were there and developed when there was a good opportunity. It seems to me that strict attention should be given to everything about the premises. Kill off your dogs and cats. They are worse than your long whiskered doctors. Haul away all the old rubbish or decayed vegetable matter that you will sometimes find. I would like to describe a farm house in Summit county, Ohio, located with barnyard a little higher than the yard surrounding the house. Dr. Underwood and myself found a very bad case of diphtheria there. I said "Doctor, this looks suspicious, let us go out and look around." We found this barnyard knee-deep with liquid manure, and a well for watering the cattle nearly in the center of that, with a plank to get to the well. We said we didn't want any of the water to drink. We went back and asked about the household supply. They said they got it from the well in the barnyard. They had three cases of diphtheria and two deaths. Now, the doctors who are members, perhaps not in central Ohio, but in different parts of Ohio, will find occasionally a farm yard scene of that kind. There is the nucleus many times of an epidemic of diphtheria, spreading over a township or whole county and getting into our cities. The matter of typhoid fever, I think, as our friend from Youngstown has said, has been pretty well settled that the germ is in the stool. He said, disinfect the stools. The stool should be disinfected, for that is where the germ lies. Now, on the matter of sulphur, some of you probably will disagree with me. There has a great deal been written concerning sulphur as a disinfectant. For my part I don't take any stock in the matter, and if ever I come to this body again I am going to prepare myself so that I think I can prove to you that sulphur is not worth its weight in anything as a disinfectant I would rather trust to kerosene, chloride of lime, or permanganate of potash. It certainly will reach those germs and destroy them more rapidly. Why, kerosene oil alone as a spray, if it was not for the grea y nature of it, is a better germ destroyer than sulphur ever was, and if you don't believe that kerosene will destroy germs, just use some of the Standard Oil Company's oil, that is being sold to the people of Ohio now at six or seven cents a gallon, set it to going in a close bed room and see. It will kill you if you let it go long enough. The use of the tongue depressor that Dr. Hoover spoke of so strongly, is the greatest outrage ever devised. A spoon is good enough. If you can't get that, use your finger, and if you can't use that, get a stick of wood. Now, if you want to prevent the spread of diphtheria in a family, have your patient washed frequently, sponged off when the fever is high. If the temperature is above normal, sponge them off with a disinfectant. Change the bed linen, put it in a disinfecting solution and wash it out. I have taken a case breaking out in a family where there were six or seven children and I have stopped it there with that one patient, by isolating that patient, putting it in a room by itself, and going ahead with that kind of a sponge bath. I use principally the permanganate of potash. I use that because it's pleasant. There is nothing disagreeable about it.

Dr. Brundage, of Xenia—There is one method that I have introduced in our city that has not even been spoken of. When we have a death from diphtheria we order a private funeral, and we don't have hacks there that the same day may be taken to a wedding or something of that kind. I make it a rule to have two hacks for that purpose only, and I have those hacks disinfected after each funeral.

Dr. Buechner—Mr. President, I think we are getting off the main point of this paper. I would like the physicians here to give their opinion how a physician should disinfect himself when he visits contagious diseases so that he will not carry it to any other place. I have had a great deal of talk about this matter, and I have not found a solution satisfactory to myself. The busy practitioner that visits twenty or thirty patients a day will find it extremely difficult for him if he has to see eight or ten cases of scarlet fever, to run home to his office and disinfect himself eight or ten times, if he wants to do it thoroughly. He can't do it. Now, what is the best way to do it? I would like to hear that.

Dr. Fisher, of Toledo—About twelve or fifteen years ago we had quite a number of cases of small-pox in Toledo. I think we had at one time twenty-eight, at another eighteen. I erected a small disinfecting room, and I visited these patients after I had seen all my others. I first went to this disinfecting room, in which I had a rubber suit and an oilskin cap, and procured my suit. I then went in and examined my patients. Then I came to this disinfecting room and removed my rubber dress and then went to my home, to my barn, and took off my outer clothing and hung that up in the barn, and used that for the purpose of visiting these small-pox patients, and I never conveyed a case of small-pox to another family. In regard to disinfection in scarlet fever and diphtheria cases, it has been my rule to visit other families first in which these cases do not exist, and then in the latter part of the day I visit my diphtheria or scarlet fever cases, and I carry a rubber coat for that purpose. It is easily carried in a buggy, and it is easily disinfected. You can wash it, and I believe if you will try the rubber clothing, and thoroughly protect your head, etc., that you will not convey disease.

Dr. Probst—The plan that Dr. Fisher has followed is the one that I adopted for myself. About three years ago I was called to Cleveland on business for the State Board of Health, and while there I got a telegram reporting small-pox at Twinsburg, which called me to that place. They had two cases in a family adjoining the village, very mild cases, but there was considerable alarm in the town because the head of the family had been down to the post office getting his mail, and they were very clamerous for quarantine. I laid down the law very strictly to the family as to what should be done, and talked about the great danger of exposing their neighbors, etc. The woman asked me how I expected to get to Columbus. I told her I was going on the cars. She wanted to know what precautions I was going to take to prevent conveying small-pox. Well, there were no precautions I could take, but I came home determined that I would be provided for such cases. It happened at that time that this subject of conveying contagious diseases was running through the *British Medical Journal*, and there were quite a number of articles published by various English physicians in regard to the precautions that should be taken, and the plan that Dr. Fisher has suggested seems to meet with the approval of a majority of the physicians there. I provided myself with a valise in which I keep a long rubber coat which comes to my heels, a bottle of bichloride tablets, and a cap that covers my hair, and I use them when I have occasion to see a case of that kind; after going out I wash my hands with the bichloride solution, and also my hair, and stuff the coat in my valise, which shuts up very tightly; and when I get an opportunity I fumigate that hat and coat with sulphur. That is very similar to the plan suggested by the physicians in England, except that they provide themselves with a rubber bag in which they could carry a coat of this kind.

The Chair—Is there any further discussion of this paper? If not, I will make a few remarks myself. This, perhaps, is one of the most important subjects that concerns the physician in his daily practice. There is prevalent throughout the country an idea that if the physician will air himself a little after his attendance upon these cases of infectious diseases, and this is true, even among the practitioners throughout the country, that there is very little danger of his spreading the contagion or infection. There is also prevalent a notion, and it is entertained by a large number of the practitioners of our country, and is one of the sources, perhaps, of the spread of these infectious diseases, that there is no danger at all of carrying the germs of diphtheria or scarlet fever from patient to patient, or from one family to another. Now a case of this kind occurs to me that happened in our own vicinity. It caused considerable discussion. I have held strictly to the idea that disinfection of the most careful kind was incumbent or is incumbent at all times upon the attending physician, especially in cases of diphtheria. We have a very respectable practitioner there that had diphtheria in his own family He simply was outraged by the opinion expressed by other practitioners that he was possibly doing a wrong thing to leave his own family and take charge of other children in the immediate neighborhood, as close as perhaps a few doors from his own family, without observing any disinfection whatever. That is not a peculiar case by any means. The idea is altogether too prevalent in the country that it is not necessary to be very careful about these cases. Now, if we could gather in those practitioners, or if we could bring them in contact with the ideas that are expressed at these meetings of ours, there would be very little doubt but that we would dissipate such erroneous notions. There is a simple method of disinfection, or rather of destruction of disease germs, that I have not heard mentioned here to-night, and that is boiling water. Now, in cases of diphtheria where you use your spoon, it is well to have a basin of boiling water to drop your spoon in, or, if you use cloths to receive the expectoration, and in a great many cases of diphtheria you have very considerable quantities of expectoration, boil the cloth. One of the nicest things to use is a little paper funnel, which you can throw into the fire. It is a good plan to burn your cloths and everything else. I believe in the efficacy of fire in these cases, and it is a very ready method. You cannot always provide bichloride solutions, but you have in every family the opportunity of using purification by fire. Another thing is the care that you take of the family. That has been touched upon very nicely by some of the speakers to-night. There is where the physician is a great educator. There is where the physician has his strong hold in the community, in the control of these diseases. Let him educate the family. Let him, by the most positive example, teach them that there is danger of spreading these diseases and that every precaution that is possible should be used; and teach the family that on them is the work incumbent not only for the protection of themselves but for the protection of their neighbors. Now we labor under a difficulty in our place. We have a very respectable board of health, but they will not appoint a health officer, and it leaves us somewhat in a quandary in the control of these cases. It depends upon us physicians who attend the cases what will be the results. I have been for the last few years urging and inculcating among the people, both among the la ty and among the profession, ideas of exteme care with regard to carrying off contagion. We cannot quarantine there very well. We have no health officer to carry out the plans, and it depends very largely upon how we teach the people to be careful, and to use every means of precaution. I think, perhaps, the best work that the State Board of Health is performing is the education of the masses and the education of the profession during these gatherings. It is certainly a very great satisfaction to me and to every member of this board that we have such a splendid meeting here this time. I confes that I had some misgivings about the results of this meeting. We have not been able to make the rates with the railroads customary for such meetings. Consequently it entails more expense in traveling and attendance upon this meeting; and if you have such peculiar councils as we have in a great many villages, as we have in our village, perhaps a great many villages of the State, it would be very hard to get your expenses borne. But notwithstanding all of that, we have a first-rate meeting here, and I venture to say that the discussions that we have had at this meeting will do this State an immense amount of good. Now we hope that we will be able to continue these meetings at intervals, and we hope that we will have a larger attendance and that we will have all of our boards of health.

One of the works of the State Board of Health, a fact upon which we congratulate ourselves, is that we have succeeded through the law, supplementing the law creating the State Board of Health, in creating a great many local boards of health. When we started into life as a State Board of Health, a few months short of six years ago, there were, in the State of Ohio, thirty-five, perhaps thirty-eight local boards of health. To-day, we have 365 local boards of health, reporting to the State Board of Health, and perhaps there are several others that are not reporting that are reasonably active and doing good work. The law enabling us to do this, provided that there must be a board of health organized in every village or town or city having a population of over 500 inhabitants. There are perhaps eighty or a few more villages of that number of population who have not a board of health at the present time. We hope that we will reach them all, and that they will have their health officers, and that we, through them, will get in closer touch with the local health authorities and through them the people at large.

We have no more papers for the occasion. We have a request by Mr. Cline that a subject may be presented to the meeting to-night having local reference to Portsmouth. If Mr. Cline will present his subject we will hear it.

Mr. Cline—Mr. President, I have some two or three subjects that I wanted to hear discussed, and I hardly know which one to bring first. But we have a question that interests us considerably, and no doubt other cities are equally interested, and that is the question of slaughter houses. We have, just outside of our city limits, some five or six slaughter houses that are wonderful things to consider within themselves, but how to get rid of them is the conundrum for us. We examined them thoroughly some months ago, and some of our butchers got a little bit frightened over the examination that was made and cleaned them up a little bit, but they are still in a fearful condition, and as they stand they drain right over into the Scioto valley bottom, the greater part of them, which possibly enters the Scioto river and to some extent no doubt pollutes the water. The question is how to get at them, and I would like to know how they are handled in other cities. Other cities certainly have the same trouble. Ours are all outside of the corporation, and consequently, we as a local board, can hardly reach them. How can they be reached, is the question?

Mr. Strong, of Ashtabula—Mr. Chairman, that is a question which has interested us considerably, and we have concluded to reach them in this way: Have a meat inspector and not permit meats to be sold in the markets unless it is slaughtered in decent, respectable, clean, slaughter houses; and we can go a little further than that, if necessary, and I am sorry that Brother Hunter is not here. Take the bull by the horns, and if the slaughter house is not located where you wish it to be, refuse to grant the privilege of selling meat. That is, withhold a license to sell meat from those who run the markets and obtain meat from these objectionable slaughter houses. I don't think there is any trouble in accomplishing that matter.

Dr. Fisher—There is one way of reaching these slaughter houses. That is, through the Probate Court. A neighbor, or any one livng or residing near these slaughter houses, it makes no difference where they are located, can go before the Probate Court, and through that court have them removed. They can be indicted as a nuisance before the Probate Court.

Dr. Probst—There is still another way, Mr. President, of getting at it. It seems that there are enough ways. Two years ago the legislature passed a law creating the office of inspector of nuisances. This inspector of nuisances may be appointed by the county commissioners whenever they think that the law relating to nuisances has been violated, and, when appointed by the county commissioners, this inspector has full authority to make an investigation, take testimony, etc., and it is his duty to bring the matter into court. The prosecuting attorney of the county is his legal advisor, and it provides that the county shall pay him fees for prosecuting the cases. If you can get your county commissioners to take hold of the matter, they have full authority.

Dr. Hoover—The great difficulty, as Dr. Probst well knows, is that it is optional with the county commissioners as to whether they appoint an inspector of nuisances or not. We had that very same difficulty right here in Columbus. We lodged a complaint with the commissioners of a nuisance, a dumping ground that was contiguous to the corporation line and was stinking a lot of employes almost out of a mill, a large blast furnace here, and we made a complaint to the county commissioners—made it officially, and they simply ignored us. The law says they *may* appoint an inspector. It does not say they *shall* and provide a penalty if they don't, but it makes it optional with them. Now that is an important thing, and we have thought seriously of trying to secure an amendment to that law, and it was offered last year, at our instigation, but for some reason it died "a bornin'," and we never heard of it afterwards There is the great difficulty with a great many of these sanitary laws. It is purely an optional matter and it is left with the anthorities to use their own discretion, their own judgment, in these cases, and they look upon sanitarians, these wise commissioners, as a set of cranks and consider their complaints of little value. The result is, they go by default and nothing is done. It is a good law as far as it goes, but it should be changed by substituting for "may," the one word "shall," and then tack on a penalty that the county commissioners, if they fail to do this shall be fined. Whenever that sort of thing comes to pass, you can get that action.

Within our corporate limits we have no trouble abating nuisances, but when you get outside of the corporation line, then of course our local board has no jurisdiction.

Dr. Carrothers—Mr. President, I want to inquire of Dr. Hoover, if a local board cannot operate under the State law and dispose of a nuisance outside of the corporate limits.

Dr. Hoover—No, sir, you cannot. A local board is a municipal board and has no jurisdiction outside of the municipal limits. Not any more than your mayor has authority to go outside of the corporation line, or the council, or any other municipal body. The township trustees have a law providing that they have certain powers, as in the case of commissioners, but whenever it would cost something, fifty cents, or any amount exceeding a nickel, you can scarcely ever get any action from the board of trustees; especially if it applies indirectly to the medical profession

Mr. Cline—Hasn't the State Board power, under the law, to take action in these matters?

Dr. Hoover—No, sir; only as I have stated, under this law vesting certain optional power in the commissioners. If we had had any power we would have made a test case right here in Columbus long ago.

Dr. Fisher, of Toledo—Mr. President, has not the local board of health power in the matter of milk inspection? For instance, to go as far as the milk supply exists, for the purpose of inspecting the premises from which the milk is brought?

Dr. Hoover—I say, no.

Dr. Fisher—Well, we do it up in our county.

Dr. Hoover—Well, it is a clear case of bulldozing. I am proud of you, doctor. Just as much as you get more than belongs to you is that much gained.

Dr. Fisher—I believe that the board of health of any town or city of the State of Ohio ought to have power to protect every citizen of that place, village, town, city, or township, and I believe that the law ought to be that wherever there is one single board of health in a county it ought to control everything pertaining to sanitary matters in that county. I think that would simplify the matter.

Mr. Cline—Mr. President, I don't like to differ from a man who is beyond me in years, but I do differ with Dr. Hoover. I claim the local board of health has a right to go into the dairies, be they where they may if they bring their milk into the city, and make their inspection. If we have not that right then we are one of the boards doing the bulldozing. And I think we have a right to do it. Concerning the Probate Judge business, our case lies this way: The man on whose lands the slaughter houses stand—one man owns it all, and he is a near neighbor, and he gets well paid if these houses stand there. All he has to do is to stuff a little cotton up his nostrils and he is all right. So we cannot depend on the neighbors. Just to give you an idea of the condition of things: Here is a slaughter house standing on a hillside, and underneath it they have a hole into which they dump the entrails, and here is a lot of hogs that eat part of it and part of it decomposes. They will go out there about three o'clock in the afternoon and butcher a beef and hang it up, and it hangs there until three o'clock the next morning. In hot weather I noticed a lot of green weeds burning under the beef, and I asked what that was for. "To keep the green flies from blowing the beef." Well, now, is it any wonder that we began to hunt up some way of reaching these people? There certainly must be some way. If not, let us join together, shoulder to shoulder, and get this legislature to give us some way to get at them. Let us not put in all the time discussing. We may discuss and discuss, and die discussing. But let us shape our matters so that after the discussions are done we can get into the legislature through some committee, in some way and with such force that they must act; and if each man gets hold of his representative and gives him to understand that the best class of people are not going to do anything for him after this unless he does something in a sanitary point of view, we will get something done.

Dr. Fisher—In Toledo we have a meat and milk inspector appointed by the board of health, who visits all the dairies in Adams township, Washington township, and Oregon township, that surround the city, and we do not confine ourselves to the townships surrounding us, but we go clear into Michigan, and where it is miles from the Michigan line, and every dairy that supplies milk in our city we claim the right to inspect their premises, and if they don't allow us we shut them off from supplying milk. In reference to the slaughter house question, we have driven all the slaughter houses out of the city limits, and also rendering establishments. There was a rendering establishment located in Washington township that was a great deal of annoyance to the inhabitants there. They brought, suit in a criminal action against this man in the Court of Common Pleas, and they gained the suit and drove the man off the premises, and if that could be the case with a rendering establishment I don't see why an offensive slaughter house would not come under the same jurisdiction.

Dr. Hoover—Mr. President, with reference to these gentlemen who differ from me, I like that. I like a man who has his opinions, and wouldn't give a snap for a man that didn't have, but I still stand on the same ground. The opinion I gave was this: That they have no legal right to make these inspections as a board of health, because their jurisdiction is only co-extensive with the corporation limits of the town or village. I will submit that to any lawyer, and I believe I will get an opinion in the affirmative. Policy may permit you to do that. These men may understand, to use a gaming expression, that you hold the trump card and have the last play; that if they don't let you inspect these premises that you won't let them sell their milk in your city or town. But that does not establish the legal right to do it. It is simply a matter of business policy. But it is just as plain as the nose on a man's face that a municipal board, it doesn't make any difference whether a board of health or a city council, has no jurisdiction outside of the legal limits of the municipality in which they have an existence.

Dr. Fisher—In the matter which has been presented to this board as to the methods of bringing about proper legislation, different methods have been suggested. One was that the probate judge might appoint the officer, which I don't believe would be the proper thing. The probate judge might appoint a man that would co-operate with the board of health and on the other hand he might not. It seems to me that the better way would be to endeavor to bring about such legislation as would broaden the sphere of the local boards. It can be done. In some municipalities, police powers extend for miles beyond the city limits, and if that can be done, there is no reason why the powers of the board of health could not be extended beyond the city limits, and I think it is in some respects. However, I am no lawyer. Take for instance, running streams, running through cities; I think that boards of health or municipal authorities have power beyond the municipal line for ten miles. I think that is the language of the statutes, and the distance is designated that they have control of these streams, to keep the streams pure and from carrying a nuisance into the city. Recognizing this fact, it remains but a simple duty to get the powers of the board extended to the requirements that have been here suggested.

The Chair—Is there any further expression of opinion upon this subject? It occurs to me that we have not given Mr. Cline very much satisfaction so far.

Dr. Probst—Mr. President, Mr. Strong, I think, had the proper solution of the question; the plan has been tried thoroughly, as he knows, at Warren, Ohio, at Mr. Hunter's suggestion, and it worked there admirably, and I believe they have now adopted it in Ashtabula. You appoint a meat inspector and require every man who sells meat in the city of Portsmouth to obtain a license from the board of health. You may charge him 50 cents for it, and make him take it out every six months, and have him display that license in his shop and meat wagon; and you can prevent him from selling meat slaughtered in a slaughter house that is not in a sanitary condition on the ground that the meat is not fit for food—that it is not wholesome. You can certainly regulate your slaughter houses in that manner. If they insist in sending their meat off from Portsmouth, you can't do anything with them, but if they depend upon the Portsmouth market, you are all right.

Mr. Cline—According to the theory of Dr. Hoover, we can't do anything of the kind. According to his theory we have no right to send our inspector into the slaughter house to inspect them, because they are outside of the city limits.

Dr. Probst—I don't think that is the doctor's idea. You can do that. It has been done at Warren.

Mr. Strong—I am not a lawyer or the son of a lawyer, but it is a matter entirely within the control of the board of health. If they learn that milk or meat or anything else is of an unsanitary character, they can absolutely prohibit its being sold there. I don't care how they learned that fact. I don't care whether you send a policeman out or a doctor, preacher or a school boy—anybody that has a good nose and good eyes can give these facts. That is all that we care for.

The Chair—That seems to be the easiest solution of it that has been suggested.

Mr. Cline—The same thing applies, Mr. President, to the dairies. Our dairies are just about as closely situated to the city as our slaughter houses are, and if we have a right to send out and inspect the slaughter houses, we certainly have the dairies.

Dr. Love—Mr. Chairman, in our place we have an ordinance preventing the sale of unwholesome milk or meat, or anything that is sold for food. When we find anything on the market that is unwholesome, that is, that we consider unwholesome, we don't stop to consider where it came from, but simply stop the sale of it. Several months ago, we had a out fifty cases of cheese poisoning in our place. We began searching at once after the cheese. We stopped the sale of all cheese until we learned exactly what brand of cheese was sold. We didn't stop to consider at first where that cheese was made, but we stopped the sale there and then, traced it back and reported to Dr. Probst. That was made in the eastern part of the State, but there was no more of that cheese sold in our place. So also, with meat and milk. If we find unwholesome milk or meat on our market, we stop it from coming into our corporation. We have an ordinance passed by our council that gives our board of health the legal right to stop everything that comes in that we consider unwholesome. It is left to the health officer whether it is or is not unwholesome. That we consider a legal right. It doesn't matter whether that meat comes from Chicago or just outside of the corporation. It doesn't make any difference to us; we don't care. It must stop and is stopped.

Dr. Conklin—That belongs under the police powers. Mr. Hunter, here last spring explained that thing very satisfactorily. He says we have power to go any place under the general police power, and when we find a nuisance existing, anything which is dangerous or destructive of health, we have a perfect right to go there and make an inspection. Then if we find unwholesome conditions existing, we can shut that right down and stop it, and all the moral law and legal law will sustain us.

Dr. Carrothers—I want to ask one question. Have boards of health the authority to fix the salary of sanitary policemen?

The Chair—The law provides that they shall appoint as many sanitary policemen as they may deem proper and I think it presupposes that they may fix the salary. I don't think there would be any legal question about that. Your council may not grant you that prerogative.

On motion, the Convention adjourned to meet Friday morning, January 29th, at 8:30 o'clock A. M.

THIRD SESSION.

FRIDAY, 8:30 A. M., *January 29, 1892.*

The Convention was called to order by the Chair, who said:

The first thing on the programme is a paper by Prof. Nelson, "The Relation of Soil to Health."

THE SOIL IN ITS RELATION TO HEALTH.

By EDWAD T. NELSON, A. M., Ph. D., Member of the Ohio State Board of Health, Delaware, Ohio.

Imagine yourself standing at this hour on one of the summits just to the north of Lake Superior. Gifted for the occasion with almost unlimited vision, your range of sight sweeps from the dark Alleghenies on the east to the fertile prairies of Kansas and Nebraska on the west—and southward across the lakes and the sunlit valleys of the Ohio, the Cumberland and the Tennessee to the low lands of the gulf coast. You are surveying in its entirety one of the geological fragments from which our beautiful mosaic of states has been constructed. It is at once a most familiar and a most simple piece of American geology.

Within this widely extended area only rocks of the palæozic series are to be found. Sandstone, limestone and shale follow each other without any natural or invariable order, but in an unbroken series. These rock masses are stratified and in undisturbed layers.

The beds of iron and coal, the mines of copper, lead and silver, the chance deposits of salt, gypsum and other minerals, though most important commercially, make up so small a fraction of a per cent. of the whole crust that they may be ignored in such a consideration as the present. It may be repeated that the common stones of the door-yard—sandstone, limestone and shale crop out everywhere along the hills and ravines in the Mississippi Valley and form its sub-strata to all depths thus far ascertained or explored. The district is a vast basin deepest near the center as measured along both axis. The rocks crop out at the surface along the north, east and west, while further to the south, the same layers may be found hundreds of feet below the surface. A great storage basin is thus provided for the use of man—a basin containing at different levels and in special localities water, oil, gas and salt, and furnishing to the sanitarian problems of greatest interest.

Placing fragments of these several rocks under the microscope, we at once unravel their entire history. Each is composed of small grains, often water worn and rounded, cemented by some later formed substance and thus consolidated into a hardened and compact mass which we term a rock.

Thus, sandstone consists of grains of quartz cemented by carbonate of lime or one of the oxides of iron. Limestone consists of bits of broken shells, corals and bones cemented by material very like itself in com osition. Shale is the familiar silicate of alumni in finer particles and less fully consolidated.

The cementing matter is always more soluble than the cemented grains, and hence when this is removed by the action of percolating waters or through the chemical agency of oxygen and other gases in the atmosphere, the rock crumbles and falls into a disintegrated heap.

This, in brief, is the story of the formation of the soil. Soil is always and everywhere the debris of older geological formations—the remains of rock masses that once overspread the same territory. It is for this reason that the study of the geological features of a country and especially a study of the mineralogical character and composition of its rock masses, prepares us for a clear understanding of the topography of the district and at the same time lays the foundation for a science of health.

If we are to give advice and direction in the selection of sites for public buildings and private dwellings; if we are to be consulted in matters of sewerage and water supply; if we are to attempt to stay the march of an epidemic or trace the relation of disease to its environment, we must understand the composition, constitution and physical properties of the soils under our feet. As there are only three classes of rocks in the district now under consideration, so there can be but three classes of soils. Remove the cement binding together the grains of a sandstone and a bed of sand is the result. Decomposed limestone furnishes us with our beds of marl. Shale changes almost without effort into a bed of clay. It may be repeated that those common substances—sand, marl and clay form the basis and body of all soils, no matter how unlike each other the soils may be in both appearance and productiveness.

Soils are rarely simple. More frequently they consist of mixtures of elements. The commingling has taken place since the first formation of the soil. Wind and wave, rain and tide, rivers and glaciers have transported and rearranged the simpler elements, imes without number. The problem is the greater since we are not dealing with a single element, with a distinct set of physical features, but with an admixture, the complex physical features often in opposition. The existence of a fourth element must not be overlooked or underestimated. All soils in agricultural and forest districts contain a visible admixture of organic matter, derived chiefly from the partial decomposition of vegetation. Occasionally, in swamp districts, this organic matter is in excess of the other elements or even exists in almost absolute purity. Such a layer may perhaps be considered a soil and designated under the general name of muck or peat. More frequently, however, it is an introduced element modifying to some extent the physical properties of the soil in which it is found. Its presence must always be noted, and the effect on the constitution of the soil carefully considered. But this is true for every mineral, salt or other foreign element found within the soil. We return to our former statement that the varieties of soil in Ohio and the Mississippi valley are these—sand, marl and clay. These must be mastered first by every sanitarian, then in turn the subvarieties and compounds.

Soils differ as radically in their properties as in their composition. They carry with them into their new relations very many of the physical features found in the rocks from which they have been developed. In some cases the peculiar physical features are intensified owing to the looseness of the grains and the absence of the former cementing elements. All of these matters must be carefully considered when weighing the question of soil in its relation to health. Sand grains are fragments of broken crystals. They are solid, glassy and have smooth faces. They are impervious to water and are not acted upon by any of the destroying forces of nature. Still further, the grains are rounded and of various sizes. They pile together loosely with large and irregular spaces. Sand is therefore always porous, though the individual grains are not. It holds water freely and gives it up just as freely. According to circumstances it may contain large quantities of water or equally large quantities of air. It may be a filtering or a storage bed, according as the flow of water through it is free or impeded.

Marl is composed of broken corals and sea shells and the bones of fish and other animals. The grains are always irregular in shape, with many flat faces and the material is always soft and porous. Water is absorbed within the particles, as it cannot be with sand, and held between the flat faces of adjacent particles by capillarity. Marl holds storage water far better than sand, but yields less readily to drainage. Marl is soluble in water containing traces of carbon-dioxide. Its chemical elements reappear in our mineral springs.

Clay absorbs water freely and holds it tenaciously by a very strong mechanical if not indeed chemical affinity. Clay is never dry, for it never parts with all of its water of combination. Clay is at the same time hydroscopic and draws water freely from the air and from other soils containing more moisture than itself. The particles are too small to admit of large interspaces and often so fine that they unite by impact, in which case the clay bed becomes almost impervious to water and cannot be used for storage. No fact in geology is more familiar than that of finding a spring or even a series of springs cropping out along a hill side just above a bed of compact clay. Water falling upon the surface of the soil soaks through the several layers until the bed of clay is reached. This being impervious prevents further descent and the water works its way slowly towards some ravine or hill side, where it escapes as a spring. At the same time, owing to the hydroscopic properties of the material, the clay may be saturated with moisture. The waters of the Dead sea are said to be saturated with salt. Hence, if a lump of salt is thrown into the surface of the water it does not dissolve, but simply floats about to be cast ashore by the wind or waves. So a bed of clay may be saturated with water hydroscopically and yet be barren as a bed for storage.

Humus or vegetable mould retains more moisture than clay, or any other admixture. Facts of this character admit of experimental proof, and may easily be demonstrated in a laboratory.

[1]Schubeler, the father of Agricultural Chemistry, in Germany, selected five hundred centigrams each of the several soils and dried them thoroughly in a kiln. They were afterward spread over a surface of thirty-six thousand square millemeters—sixty square inches—and exposed for twelve hours to an atmosphere saturated with moisture, with the following results:

Centigrams of water absorbed by	quartz sand	0.0
“ “ “	calcareous sand	1.0
“ “ “	clay	18.5
“ “ “	garden earth	17.5
“ “ “	humus	40.0

The amount of water which soils can retain was ascertained by the same investigation in the following manner: Weighed quantities of the dry soils were placed upon filtered paper in glass funnels, and the increase of weight due to complete saturation was noted after all excess of water had dripped away. The result is given in precentage of increased weight:

Quartz sand	25	per cent
Calcareous sand	29	“
Clay soil, 60 per cent. clay	40	“
“ 76 “ “	59	“
Heavy clay, 89 “ “	61	“
Pure clay	70	“
Humus	190	“

Pure peat after drying, has been known to absorb from three to five times its own weight of water[2].

It will be observed, in passing, that the sanitary value of a soil may depend upon the physical properties of the soil as regards moisture, rather than upon the absolute quantity of water present at any time. It appears from the consideration already noted, that the sanitarian is compelled to study the question of water in the soil under at least three distinct heads. 1st—Water held by capillarity and drawn toward the surface in a direction contrary to that of gravity; this, true to a limited degree with all soils, is especially true for marl and certain forms of clay. 2d—Water held by hydroscopicity—this is a water holding peculiar to clay and soils containing a large percentage of clay; such soils are always damp, and are unfortunate sites for towns and private dwellings for reasons that will be more fully developed as we proceed. 3d—Ground water—this subject is so important, and, indeed, of such vital interest, that we give it much of the time and space remaining to this paper.

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[1] Schubeler, as quoted by Goodale, Physiological Botany, 6th ed., page 240.

[2] Goodale, idem.

Probably in all parts of the world, having an average rainfall, there is a supply of water in the soil within recoverable depths. An impervious layer is bound to occur sooner or later and the descent of water checked. Such a soil or mass of material constitutes a veritable reservoir. In all cases the lower limit is definitely marked. The upper limit denotes the quantity of water in place, and must vary from season to season and day to day. Like an artificial reservoir of masonry on some commanding hill, this basin may be filled or empty. It may overflow its banks and walls, or fall below the mouth of the outlet pipes--the village wells. The ground may be saturated to the very surface of the soil in January, and and yet every spring and well in the neighborhood fail before August. This ground water is not stagnant though in a reservoir. It is a st eam moving with the dip of the rock masses below the surface configuration of the country. It is difficult to estimate the rate of flow, which must of necessity be variable both as to time and place. At Munich, the horizontal movement amounts to five meters per day.[3] Like the Ohio, the Scioto, and the other surface streams of the State, these underground streams are liable to constant and varied pollution. The very existence of the ground water proves that pollution is probable. The soil is porous. All liquid and soluble substances are sinking through the soil and seeking the hydrostatic level below. "Cultivate lands, with rich manured fields, give a water containing both organic matter and salts in large quantity. In towns and among the habitations of men, the water contains calcium and sodium nitrites, nitrates, sulphates, phosphates and chlorides. The nitrates in this case probably arise from ammonia; ammonium nitrate being first formed, which dissolves large quantities of lime. Organic matter often exists in large amounts, and slowly oxidizes forming nitric acid and ammonia."[4] In this same connection there is another question of the very highest importance. What is the filtering value of a soil? I remark at the outset that that must depend upon the composition of the soil, its many physical properties and especially the length of time it has been employed without renewal, but that it has been greatly overstimated in every case. Three classes of impurities are to be considered. Most noticeable and yet of least value from a sanitary standpoint, are those of a mechanical nature, such as fine mud, sand and clay. They are held in suspension and may be removed by filteration, as it is called, or more properly by the geological law of sedimentation. All running water carries a load of sediment. The size of the particles is found to vary as the sixth power of the velocity of the current. Thus, if a given stream of water runs one inch a second it can transport only the finest sand. Now, if the velocity be doubled, so that the water moves two inches in a second, it will transport material 64 times (the 6th power of 2) as large. Conversely, if a stream moving at a given velocity have its velocity checked—sediment is at once deposited.[5] The river Rhone enters lake Geneva as a mountain torrent loaded with sediment. It issues from the lower end of the lake as a clear and sparkling stream. Ground water existing in a bed of sand, or slowly percolating, is cleaned of its visable admixture of sediment.

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[3] Rohe'—Text book on Hygiene. 2d ed., page 128.
[4] Parkes' Manual of Hygiene, 6th ed., vol. 1, page 26.
[5] For a fuller discussion, see Leconte's Elements of Geology, 3d ed., page 19.

A second class of impurities is both soluble and chemical. There is no satisfactory evidence that these substances are ever removed by simple earth filtration. If there were, it would be difficult to account for the hard water in limestone districts, and for the minerals in soda and sulphur springs. Every advance in science still further establishes the law that chemical impurities in water can only be removed by chemical means. It is not sand but alum which produces the partial purification of water from organic and other chemical impurities claimed for patent filters now on the market.

The third and last class of impurities is again particulate, consisting of microbes and other lowly forms of life. They are floating with the current and might, it is claimed, be removed from it by filtration, but scarcely by a filtration as gross as sand, lime or clay. Professor Verrill, of Yale College, has stated that those microbes can pass through cast steel or even through glass, hence we may well talk of the futility of a filtration which is nothing more than a sedimentation. Dr. Frankland claims that microbes by their "minuteness defy filtration." He presents the following experiment in full confirmation: "One volume of the rice-water evacuations of a cholera patient was mixed with five hundred volumes of distilled water and the mixture passed through filtering paper. Before the filtration the liquid was opalescent, and so it remained afterward. The filtered rice water liquid was next passed rapidly through animal charcoal. The opalesence was thereby further diminished, but not entirely removed. The organic matter was found to be exactly *one-seventh* that in the Thames river water. It would by chemical tests be considered an ideal drinking water, and yet the cholera microbes were not removed and the twice filtered fluid was seriously contaminated with choleraic matter.[6] We cease to wonder at the failure of soil filtration when told as we are by Pecani, that the germs of these microbes are less than the 1-25000 of an inch in diameter. If this is true for the deeper layers of the soil what shall we say of surface layers near human habitations—polluted as they must be by the excreta of men and animals, the filth and garbage of the kitchen, and the dust of manufacture and the several trades. The inventor and proprietor of one of the best advertised systems of artificial filtration virtually admits that his system would be another monumental failure if it were not for a simple device by which he is enabled to reverse the current and thus wash the sand in his filtering bed at stated intervals. But no such reversal is possible in the soil under our feet. Here the flow of water is always downward and the layers of soil nearest the surface become filth laden. All interspaces are choked and the grains of sand, marl and clay covered with grease, excreta and mineral salts. Mechanical filtration is imperfectly performed and the ground becomes filled with water, which at last by its weight opens out an artery in the strata by which it escapes to the ground-water below.

Parkes, Frankland, Pettenkofer, Chandler, and other sanitarians have studied most carefully the problem of soil pollution in England, in Germany, and in the United States. Their results are in such concord that we may accept the general average as true for all places within the inhabited districts of the world. The average person returns to the soil daily three ounces of solid excreta, forty ounces of liquid excreta, and seven and one-half ounces of kitchen garbage. To this must be added five gallons of wash water from the laundry and the bath—always of doubtful purity and often loaded with the germs of disease. I have thought to impress these statements by connecting them with the city in which we are now assembled. Columbus has a reported population of one hundred thousand, which number will be the basis for our calculations. Ignoring for the present the removal of matter by sewerage, we find a daily product of 20,000 pounds of solid excreta, 250,000 pounds of urine, and 50,000 pounds of kitchen garbage—a total of 320,000 pounds, or 160 tons. To this must be added 2,000 tons of wash and laundry water. What must be the condition of the soil under a city subjected day after day to such treatment, and for all the years of its history.

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[6] See Report State Board of Health of Maryland for 1888, page 213.

We have already observed that the ground-water fluctuates with the season and the demands that are made upon the supply—now rising to the surface of the ground, now falling to a mid-summer level. At least once in each and every year the ground water occupies the surface layers of the soil which are infected, as we have shown, by millions of tons of dead organic matter, in all stages of putrefaction and decay. The rising ground water leaches out the soluble and chemical elements of a soil as when passing through an ash-vat. The soil is freed, to some extent in this way, from its load of impurities. That is true, but how about the ground water in the basin below? The loss of impurities in the one is certainly offset by the gain in the other. The war-cry of every sanitarian—a cry to be taken to every household in our beautiful commonwealth—should be this: "Never cast upon the ground anything which you would object to finding in the water from which you obtain your drinking supply."

Again, in what condition is the soil left by a fall in the ground water. It is here that even a brief study of geological laws will be of greatest value. A sandy soil becomes relatively dry, holding less than twenty-five per cent. of water. A sand bed may be washed to absolute cleanness, for it, of all soils, gives up its load of impurities most readily to the current of water passing through it.

Marl dries more slowly, since twenty-nine per cent. of water is retained in the interstices. In addition to this, a variable amount is drawn upward by capillarity. Clay may remain permanently water soaked through the combined influence of capillarity and hydrosopicity. All soils about our dwellings, and in our towns and cities—sand being a possible exception—may retain sufficient moisture at all times to render them damp, musty, and reeking with organic matter partially disintegrated and partially decomposed. Such soil is the prolific bed for moulds and the mildews, whose germs always accompany diseases even if they do not produce them. These layers are also filled with ground-air which ebbs and flows with the movements of the ground water below, and also with the varying temperatures to which it is exposed. Currents are produced in the ground-air also through the products of decomposition. Let us suppose that the soil under a dwelling is so pure that it has absorbed no more than a single ton of excreta and garbage. Ersmann has calculated that, under these favorable circumstances, the following poisonous gases would be regularly eliminated every twenty-four hours:

Carbonic acid gas	350.0	litres.
Ammonia	149.0	"
Sulphurated hydrogen	1.2	"
Hydrocarburrets	570.0	" [7]

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[7] See report of State Board of Health of Maryland for 1888, page 205.

These poisons mingle with the ground-air by the law of diffusion, and then are drawn into our cellars and upward into our dwellings, as the air about us is made warm and light by furnace or solar heat.

The subject of the soil in its relation to health is so vast that its discussion better fits a volume than an essay. Any paper, therefore, must end abruptly somewhere, and this one might as well end here and now. With a single closing thought we give place. Thus far we have been discussing soil pollution. Our views are indeed somewhat pessimistic. Is there no brighter side? Is there no such thing as soil regeneration? Bring here, if you please, a half dozen English sparrows freshly killed. Place one out of sight within a bed of pure sand; another in fine coal ashes; a third in marl: a fourth in sub-soil clay; a fifth in pure humus or muck; the sixth and last in garden or agricultural soil. Allow thirty days to pass, then exhume the bodies and report the result. The birds within the sand and ashes are only partially changed. There is about them a strong odor of decomposition. We rebury the remains and pass on. The marl has in some measure preserved the body. Petrifaction has set in and the bird may yet become a stony fossil. Additional time is asked for, and as freely granted. The bird in the clay of the lower sub-soil is unchanged in its outer aspect, save that it is covered by a mould as varied in form and as beautiful in color as an American forest in the autumn of a frostless year. The humus has preserved the specimen with such absolute perfection that the fringing of the feathers may be as clearly traced as during life. No decomposition, but a strange metabolism—wax taking the place of flesh and nerve and fiber. We look in vain for the sixth bird. It has disappeared, and were it not for a slight discoloration of the soil, we might have concluded that the body had been removed by some prowling beast. Not that. It has returned to the earth from which it came. Dust to dust—the cycle is complete. The soil is clean to the touch and to the more delicate sense of sight and of odor. The transformation has come without offense. This wonderful mystery is not a record of the soil—sand, lime and clay have no such victories as this. We are introduced into the inner sanctuary of nature. Forms of life so low that their very existence is doubted by many, are the agents of this miraculous change. Bacteria have changed the dead matter from a mass of corruption into soil and plant food, harmless alike to air and water. The lesson is quickly learned. Only agricultural soil containing microbes is able to receive and make innocuous the excreta of the body, the garbage of the home and the dust of commerce. There is a limit to the regenerating power of the soil. Give it a task within its strength and the problem of sewage is solved—the pollution of air and water prevented and the soil ever preserved as one of man's most priceless possessions.

The Chair—Gentlemen you have heard the paper. It is now open for discussion. We have quite a programme to get through this morning, and I advise that all discussion be carried on promptly and to the point.

A Member—Mr. President, inasmuch as we have a pretty full programme, how would it do to waive all discussion, unless it is spontaneous, and hear these papers read, and then if there is time we can discuss such papers as appear to be of peculiar interest.

The Chair—It appears that there is no tendency to discussion. The question arises whether we had better not have the subject which was postponed yesterday and proceed to the consideration of the subject of legislation which will come up perhaps under the paper, "Desirable Sanitary Legislation," by Mr. Hunter, of Warren. If the house is ready for this and will permit the varying of the programme to that extent, I would recommend it.

DESIRABLE SANITARY LEGISLATION.

By Geo. P. Hunter, Esq., Warren, Ohio.

To say what legislation is desirable, involves the consideration of the various sections of existing laws, and also, the legislative plan upon which the sections have from time to time been enacted.

It is easy to discover, on slight examination, that the codifiers of the statute laws of Ohio in 1880, did little else than group the existing laws on this and many other subjects. It is equally easy to discover that the group, from section 2113 to 2148, each included, were never codified, in the proper sense of the word. Numerous inconsistencies, repetitions, and ambiguities remain, and while there is great strength in some provisions, others are very weak.

The very first section, for instance, provides for the board of health, and provides that the mayor shall be president, but does not provide for a presiding officer in case of his absence. A majority of the board shall constitute a quorum. It cannot be intended that a bare majority can transact all business entrusted to such boards.

Section 2120 provides that any person, other than an officer, who fails to faithfully comply with any of the four preceding sections, shall pay a fine not exceeding fifty dollars. "Other than an officer." An officer of what? We can guess that it means an officer of a board of health, but it does not say so. Again, why should any kind of an officer be exempt? The truth is, that the exemption is a strange rock, that has floated down in the ice of a glacial period, and dropped in the sand. It is without home or relatives. But a greater inconsistency appears when in this connection we read section 2137: Whoever violates any provision of this character (which includes the four sections before referred to) or any order of the board of health made in pursuance thereof, or obstructs or interferes, &c., shall be fined in any sum not exceeding one hundred dollars, or imprisoned not to exceed ninety days, or both, &c. There is no "other than an officer" this time, and no "fifty dollars."

By section 2122, the council may grant power to the board of health to make such orders and regulations as it may deem necessary, &c., which shall have all the force and effect of ordinances of the corporation, &c. Now anything that had the force and effect of a blister, you doctors would diagnose a blister, pure and simple. So it is that these orders are ordinances, pure and simple; but not a word is said as to how to be passed, whether by one, two, or three readings; nor one word as to publication, record, or verification.

Section 2115 authorizes the board to appoint a health officer, clerk, and physicians, and define their duties, and fix their salaries. Section 2131 authorizes the board to appoint still other officers, called sanitary police; but not a word is said as to who shall define their duties and fix their salaries. By section 2140 the council of the municipality is directed to pass ordinances to defray the expenses incurred by the board of health; yet beyond the compensation of certain officers, it is nowhere authorized to incur expenses for so much as a sheet of paper, a book, pen, or pencil.

Other sections, and notably sections 2142 and 2147 raise a conflict between the board of health, its health officer, and the council, by giving the two former concurrent authority to do certain things; as for instance, to appoint sanitary inspectors, and to the council authority to defeat any appointment made by either, by fixing their salary so low that nobody could be found to serve.

Two other serious defects exist, which are matters of policy. The first is in the present method of creating and perpetuating boards of health, under section 2113. It is generally supposed that the selection and election of members of the board of health by the council, was adopted in the hope that better men would be secured, than by popular election. If that was the purpose, it was commendable; but in adopting the plan, a very important natural law was overlooked, viz.: That water never runs higher than its source. This observation will be understood by those having experience in such work, without further comment.

Again, the treatment of boards of health by councils, and councilmen, in very many instances, shows that the former are looked upon as menial appendages, subject to any kind of treatment that a low bred man may be familiar with. It takes the form of public utterances in the council meetings, tending to humiliate the other body, and to destroy its influence among the people; very often, and what is vastly more serious, it takes the form of positive obstruction, as assuming to review, and criticise, or disapprove the work of the board; refusing supplies; expressing, by resolution, an opinion upon proposed measures; and in some instances, even passing ordinances in direct conflict with standing orders of the board.

The foregoing is a conservative statement of what can be observed to a greater or less extent all over the State of Ohio at this time, as well as in times past. I do not mean that this state of affairs exists without any exception; but I venture the assertion that not a single board of health exists in the State of Ohio that has not at some time, and to some extent, experienced the discouraging treatment of which I speak. To say that it should be endured for the cause, is simply stating what is going on almost everywhere; yet it is not a convincing reason why a man of self respect should assume duties when he is subject to such humiliations; and it is no reason at all why such a condition should exist, if there is any possible plan to avoid it, and thus raise the service to a position of independence and respect to which it is entitled above any other secular employment in which a human being can engage—that of saving human life.

There is still another objection to this section, which I regard as very serious. Considering that the plan of appointing is adopted to secure good men, that should mean the best men for the service. It must be conceded by everybody having experience in such work, that the best man is he who has such command of his time as that he can make and meet appointments, including board meetings; can inspect his territory (and this every good board of health man must do to some extent, unless his town is a great city, having means to hire inspectors), can perform promptly and thoroughly committee work falling to him; can give the subject of sanitation, with reference to the whole field of operations, such reflections as will enable him to give valuable counsel when his board deliberates.

I am aware that there are boards of health which are mere figureheads; that a health officer, by choice or compulsion, undertakes to group himself into a body of seven men, and be a board of health, using the other body as a dignified convenience, to vote salaries, and occasionally amuse itself with some great or little question, apparently turned loose in the room just to amuse or entertain it for an evening, once in a long while. I have no experience with such a body; and as I am asked to write about desirable sanitary legislation, you must excuse me if I speak only of the statutory board of health.

The valuable and telling sanitary work does not require technical knowledge, and I venture the statement that the very best man that can be selected for the sanitary work is the tradesman, mechanic or day laborer, who has fair intelligence, who is willing to learn, and has such command of his time as to be able to give the work proper attention. The very worst man for sanitary work, is the man who has no command of his time. Now, who is that man if he is not the physician? I hope you doctors will not send me an ultimatum for saying what I have. I am Chili in this assembly and everybody says Chili would get licked.

A physician who is a good doctor, must go when called, and owes his best thought and energy to his noble employment. The doctor who has no employment is usually a noisy, conceited babbler—the last man wanted for sanitary work. "Footprints on the sands of time," is an expression glorified in poetry and prose, painting and sculpture; but I challenge you to find a single word, color or form glorifying "mouthprints on the sands of time." No; a first-class board of health man needs sharp eyes, a thoroughly developed nose, good feet and legs, and it is utterly immaterial whether he has any mouth at all.

A village was incorporated recently. The mayor was very enthusiastic, and hastened to inform me that the very first act of his council was to appoint an excellent board of health. I said "whom did you appoint?" "Oh," said he, "every doctor in town—we have five good ones." I inquired as to the sixth, and he said he was a butcher. Noticing that I said nothing in approval, he asked what I thought, and I told him the story of the man and his child. One of those domestic occurrences took place with which we are all familiar, and a sympathizing neighbor asked the father as to the condition of his wife and child, and he answered, "Wal, the woman gets along pretty well, but the baby died a-bornin'." He meant it was still-born. So I told my friend that the butcher might do him some good, but the others never would. A year passed, and his board has never quorumed, and from that fact alone, I will swear that his village has four good doctors.

Now, without any more circumlocution, I will march straight up to the danger point, and say that the section in question should be so amended as to require the health officer to be a practicing physician, and to allow one lawyer on the board, and otherwise to exclude all professional men. A minister would be too good. It won't do to have very many good men on the board.

The last suggestion of amendment I would make is to so amend section 2139 as to provide for a summary trial in case of prosecutions, either to the court, or to a constitutional jury of twelve. This is the process now authorized in case of violation of humane laws, and in case of game laws.

Unless the accused waives a jury, the court shall make out and cause to be subpœnaed, a panel of sixteen citizens. Then each party has two peremptory challenges, and others for cause. If the number is reduced below twelve, the court orders bystanders called until the panel is full. A conviction is followed by fine, imprisonment or both as the primary penalty. Then the work-house may be the place, and offenders particularly dread the brush business.

Having now concluded what I cared to say of existing statutes, and their amendment, I will briefly speak of the statutory plan upon which sanitary laws and sanitary organization goes. In the first place, the idea was that densely populated communities alone needed sanitation; and so there are few laws, and no organization for sanitary work, outside of villages and cities. The result is, that the lowest death rate is in the municipalities, and the death rate in many parts of the country is startling.

Not long ago a publishing house presented me a set of sanitary charts; and among them is a chart showing the condition of a farmer's premises. The earth, foundations, and buildings are made transparent; and the objects beneath, and the water and gases, are colored. The first object to deserve attention is the living apartments and the vegetable cellars below. Then there is the well, the spring, the graves of dead animals, the privy vault, and the barnyard and hog pen. I tell you, my friends, that it is not surprising that whole families are being swept away by diphtheria, scarlet and typhoid fevers. The strange thing is, that sanitation in the country has been neglected so long in this great and enlightened State of Ohio.

Now, when this crippled and often humiliating condition of the municipal boards of health is understood, and the complete failure of the present plan to afford sanitary protection to the parts of the country most needing it at present, it seems to me perfectly clear that the time has surely come when the legislature of the State should reconsider the whole subject of sanitary legislation. The time for tinkering has gone by, and the plan itself should be reconsidered and reconstructed.

The plan for enforcing humane laws is by state and county societies. The county society provides uniform regulations, exercises a general supervision and support, and pickets the whole territory with local officers to report, and to execute the laws. If a strong and representative board of health was established for each county, with its executive office in the largest municipality, but with power to hold meetings wherever advisable, and there intelligent health officers and sanitary police appointed wherever needed, all working harmoniously under a uniform code, the county boards receiving assistance, advice, and education from the State Board, and extending it to its officers and the people, the change in the sanitary condition of different municipalities, and the county at large, would be as wonderful as the turn of a kaleidoscope.

Another plan has been suggested, which is, to have the probate court, under a directory statute, appoint the boards of health for the municipalities, and divide up and assign the outlying territory to the several boards so constituted. This plan commends itself to popular favor, by de-centralizing power, and catering to local prejudice and pride. The objections are, that indifferent municipalities would continue indifferent; there would be no uniformity of rules and practice; and the multiplex machinery for the State as a whole, would continue as at present, confusing, unwieldy, and uncontrolable. The plan would be a great improvement on the present plan, but the power for good would be lessened as the authority was divided up and de-centralized.

A few years ago there were, in my city, numerous deaths each year from diphtheria, scarlet fever, and typhoid fever. In 1887 a board of health, composed of only ordinary men, without much technical knowledge, took a notion to break loose, in a sanitary way; and they did. They quickly cleared out the hogs, the privy vaults and old deposits, the dead animals, the stinks, stenches and nastiness, both of condition and practice. The result is that for years there has been scarcely a death from any of those diseases, in a population of eight to ten thousand in a territory of less than one and one-half square miles. These people yearly witness the blotting out of whole families with these diseases just without the municipal territory. If you should suggest to any intelligent citizen that the immunity they enjoy was due to season, climate, or other accidental cause, your ignorance would provoke pity. As sure as that there is a God, so sure is it, that if the sanitary work done in my little city, and in very many other municipalities of Ohio, was extended to the whole State, there would be saved annually from premature death, a whole army in numbers, of the very cream of the population of our beloved State. No law made by the present legislature will be attended with such momentus results for the good of the people and the welfare of the State, as would a law that could be made to promote the complete and sanitary surveilance of every part of the great territory. If public sentiment and thought was drawn to this, as it might be by a determined and harmonious effort of those aware of the facts as they exist, and a bill was presented which was free of any suspicion of selfish or class legislation, and broad, unselfish, and patriotic, it would be strange indeed, if the law makers of the State, would not gladly join hands in the good work, and carry it forward for the great good of the people and the honor of our commonwealth.

The Chair—Gentlemen, you have heard the paper. It is now open for discussion.

Dr. Beeson—It seems to me that we ought to come to some practical results. I think all over the State that we who have been engaged in sanitary matters are pretty well convinced and pretty well together upon the subject of needed legislation. We won't accomplish anything if we come here and talk about it unless it results in some practical arrangement. I don't know enough about the State Board of Health to know whether they have a committee upon legislation or not, but it seems to me that we ought to have a committee on legislation to insist upon a system of sanitary laws before the present legislature.

The Chair—I would just say to the body that the State Board of Health has a committee on legislation, but it may be thought advisable to proceed a little further and get all the assistance we can out of this body. Are there any other remarks upon this paper.

Dr. Reed—If I understand the paper correctly, Mr. Hunter advises a trial in cases of the violation of the law of a municipal board of health before a jury. Now it has always occurred to me that a jury, as a rule, is a pretty uncertain body, and one of the things we had to contend with in a recent suit that is even yet pending in our city, was to get it out of the hands of a jury.

Mr. Cline—I have felt before now, when I was listening to some preacher, especially during a revival, when he was hitting at random a little bit, that he was talking at me all the time. I felt a little bit that way when the gentleman was reading the paper. It didn't seem much difference what point of the subject he took up, it seemed to apply to our case, and more particularly when he strikes the opposition of council. It has been one of our greatest troubles.

Unfortunately, as in a great many other places, politics has a great deal to do with the formation of our council, and it stands six Democrats and six Republicans. The Democrats are always against all sanitary regulations, while the Republicans are in favor of it. We used to say the Democratic platform was whisky. I won't say it is filth in this case, but everything that is brought up, they seem to fight us on. As Dr. Probst is aware, we have one subject which we have been giving considerable attention to. We have held the idea that council was compelled to pay our bills as sent over and then have recourse upon the property. We sent over a batch and they paid them. We sent over another batch and they refused to pay them and handed them over to the committee on law and claims. They had them for two or three weeks and we forced them into making a decision and they finally decided that council should pay the bills, but sent a peremptory order to the board of health to do no more of that kind of business. Then when it came to this Convention here, we passed an order of course that our body should be represented here, but we were immediately notified by our council that they would have no money to spend for a body of men to go out on a junketing trip; that it didn't amount to anything anyway. They have gone so far as to move that the board of health be abolished. A very prominent member made a motion in an open session of council that the board of health be abolished. All these things we have to contend with. Well, now, the truth of the matter is here. Heretofore, as the gentleman refers to, we have had a board of health that didn't amount to anything. They did nothing. Consequently there was no expense created, and when we got another board in and a health officer that has some snap about him and was moving along in the right direction, something new was turning up all the time. The town was in a fearful condition and some steps were taken to brighten it up a little, but when it was found there was an expense, they began to compare the expenses of this board with those of the board which didn't do anything. It was enormous, in their eyes, and they say they won't pay it. I hope we will have some way of making them pay it.

One remark of the gentleman made me feel a little blue, as it led me to believe they had some loop hole to crawl out of our bills. I hope I I misunderstood him. I was well pleased with the point he makes in the formation of boards. Now it is true I think that a health officer should be a physician, but there should not be any more of the board of health physicians, and I don't know that it is policy even to put lawyers on. I wouldn't put many of them on, anyhow. The question comes up, then, who shall we put on? Well, the point is to select a man, of course, who has as much time as possible, and I think that the gentleman is correct that the mechanic or the clerk or some one who has a little extra time is the party to do it. Now I don't know why, when they put me on, they selected the profession I follow. But I have done the best I could and I expect some of them will be glad when I get off. When a man is put on a board of health and does his duty, he must make enemies among certain classes of people. If he has a fine nose, somebody will discover it. Being chairman of the nuisance committee, I stepped into a cow stable and hog pen one day and an old Irish woman came out and I called attention to it, and she says "Oh, yes, you people have a d——d fine nose."

Mr. Hunter—You didn't deny it.

Mr. Cline—No, sir, we don't deny it. We never deny facts. But I disagree with the gentleman when he advocates the idea of referring these matters to jury trials. I have no confidence whatever in a jury trial. I had one little experience in my life with a jury that just rattled me. I was once in the Common Pleas Court, picked up as a talisman on a jury. Some fellow was being tried for some little misdemeanor and I didn't think he was guilty, but when we went out into the jury room I was the only man out of the twelve who did not think so. It stood eleven to one for guilty. When we went out of that jury room the verdict was twelve for acquittal.

Dr. Hoover—Mr. President, I was not disappointed in the paper. I knew we would have something good and something to the point. Mr. Hunter was with us a year ago and I think we learned something then, and I know we have learned something to-day. At first blush I would be inclined to place myself with the two gentlemen that have preceded me and say that I was opposed to jury trials, but I have learned caution a little bit, and I believe that Mr. Hunter must have some pretty good reasons for saying it, and I have so much respect for his legal ability and of his knowledge of the relationship of the jury to cases in general that I hesitate and am rather inclined to think that if probably we knew his reasons we might be of the same opinion that he is. One of the great difficulties in securing sanitary legislation in this State has been the diversity of opinion as to the wants in this direction, and this accounts for a number of laws that are uncertain and ambiguous, and many of them unquestionably conflict. They are presented by representatives from different sections of the State, and while it is made a statutory law and is in general operation, it does not fit in some other locality. I am in hearty accord with his idea of centralizing the sanitary power. I believe that is the general tendency in all branches of affairs, of government affairs, whether national or municipal, and I believe it could only result in good. I have not very much to say on the subject, because a great deal has been said already, and pretty nearly all that is necessary. I quite agree with this gentleman here, that the proper thing for us to do is to adopt some definite form of action and follow it out. If we can get the co-operation of sanitary bodies all over the State, we can formulate a law and by united action secure the passage of such a law as will secure some satisfactory legislation. I think I can almost say that I agree, while I am a member of the medical profession, with Mr. Hunter, that few doctors, if any, should be on the board of health. That, if the doctors have any ability, they are busy persons, and while we claim to be the fathers of sanitary neasures, while we have been philanthropic and urged it and educated the people up to this point, still we are perfectly willing—we are philanthropic enough to be satisfied with the results and don't care whether we have any of the honor or not. It is the medical profession that has taught the people the necessity of sanitary legislation, and the numbers of those who have been advocates of it, among the legal profession, have been astonishingly few. We have some that are very able. Doctors are too busy a class of men to be on boards of health. We have seen that demonstrated in almost every town in the State, that it is difficult to secure a quorum and the business of the board is postponed from time to time on account of the failure of the doctors to materialize at the proper time. It is not their fault. Their time is not their own. I hope that this meeting will see fit to start some action that will have a definite purpose in view to unify the sanitary affairs in this State and secure a definite plan of legislation. We will not have any trouble if it comes in a proper form. If there is evidence that the sanitary interests are united, there will be no difficulty to secure the needed legislation. That legislation, though, ought to be very carefully considered, and it will take, doubtless, a considerable amount of time, but suitable laws can be formulated and there is no better time than now to commence.

Dr. Conklin—I am very much pleased with Mr. Hunter's paper; I have always liked the tone of his papers here—very decided and to the point. In regard to the point he makes about physicans being members of the board, I have been an advocate and am still an advocate of not more than two physicans on a board composed of six members, but without any members from the medical profession upon that board, we have in fact no guide on points of sanitary legislation and consequently there should be one physician on the board. As Dr. Hoover says, of course our time is not our own, but to a certain extent every man in the profession should control a certain part of his time.

Dr. Reed—I move you, sir, that you appoint a committee of three, of which Mr. Hunter shall be chairman, on legislation, to report to this Convention a digested bill; I think that would bring it up in proper shape.

Mr. Hunter—Now, of course, I would like to have you gentlemen arrange this to suit yourselves. I don't want to be understood as saying anything that will contravene your ideas about it in any way. But there is one trouble about going this winter and next winter. Everybody knows who ever had experience with legislative bodies, that this constant asking wears them out and they won't look at you, and it seems to me that if we want some amendments, it doesn't matter when we make them; let us make one grand rush and upon a thorough plan that will systemize the whole State. We ought not to worry the legislature, but we ought to wait and suffer until the bill can be presented. If the committee is appointed they can be from one locality and can come together frequently and have a conference. It seems to me the way the bill will have to be presented is for some one to make a rough draft and print it in sections, as the man roughs it out; he can forward it to his associates upon the committee, or to every board in the State. It must be borne in mind that comparatively few boards in the State of Ohio are represented here right at this moment, but we can chuck this thing under their noses and ask them to give suggestions so that the committee can have suggestions from every direction, and get the benefit of them. Then let the committee avail itself of these suggestions, and work it over as the potter would his artistic form, and when he gets it done submit it to the State board, and if they indorse it, why, submit it whenever they get it ready. Now, it may be possible that with the study we have given this thing we can be prepared to report in thirty days. If we could get ready by the first of March there would probably be a pretty good chance to get it operated upon by this legislature, unless they have reformed mightily.

Mr. Cline—I am heartily in favor of the idea advanced by Mr. Hunter. Now, I was wondering all the time, although I didn't say so because I had not had much experience, where was the necessity of waiting one or two years on this matter when we have all of us given this matter study for some time; and I don't see why this committee cannot send out for these suggestions and have the suggestions returned, and in thirty days' time have this thing in shape to go before the present legislature. I am heartily in favor of the motion as it now stands.

The Chair—The motion is that there shall be three members appointed from this body who shall report to the State Board of Health at their earliest convenience, a bill revising the sanitary legislation of the State, and including all desirable legislation.

The question then coming upon the motion to appoint a committee, it was carried.

The Chair—I will appoint on that committee, Mr. Hunter, Dr. Reed of Mansfield, and Dr. Church of Salem, Ohio. It places you in easier communication, I think, than it would to distribute you in other ways.

Dr. Reed—A suggestion was made to me by Prof. Nelson, and I think it is a good one, and that is that Dr. Probst be added to this committee. I think there should be a representative from the State Board of Health. I will make that motion, that Dr. Probst be added to this committee.

The motion being seconded was carried.

The Chair—The motion prevails and it then stands, Mr. Hunter of Warren, Reed of Mansfield, Church of Salem, and Probst, of the State Board of Health.

Mr. Hunter—There is one thing I would like to say, and that is that two or three gentlemen have misapprehended the reading of my paper in one particular. I simply want to correct it here and not allow them to go away with the impression that that is what I said. All I recommended is that there be a summary trial. Now, as you are well aware, the board of health may act upon its own orders, and what is more important and better, it may act upon the ordinance of a municipality. If it acts upon the ordinances of a municipality or under them, the prosecutions can only be before the mayor or police judge. If it acts upon its own orders, then the prosecutions can be before the mayor or any justice of the peace, because the penalty for violation of them is a statute of the State. Now, then, if you proceed under the ordinances of a city and your council is so far in sympathy with you that they will impose no imprisonment as the primary penalty—and what I mean by primary is when the court first talks, what he says then is the primary penalty. The court may say we will fine him so much and he will stand committed until the costs and fine are paid. That makes imprisonment a secondary penalty. But if there is a primary penalty of imprisonment, there must be a jury trial if they demand it. So the only alternative is to make your ordinances so that only a fine is the primary penalty, or else if you prosecute under the State law, you must go to the trouble of probably having the party bound over either to the Probate Court, having criminal jurisdiction, or to the Common Pleas Court, and if to the Common Pleas Court, they must go before the grand jury, and grand juries are fatal to these cases. Besides that, it ought to be summary. They ought to have the benefit of a conviction, and they ought not to wait a year for it.

Now, what I suggested with reference to prosecutions under the humane laws, and also prosecutions instituted by the game warden under the game laws of the State, to be adopted here was because it is a precedent, and it will help us along, and the legislature will not be inclined to find fault with us. That is a summary proceeding, and it is mighty summary, too. There you can have your imprisonment as a primary penalty, and we can work the workhouse right in on them; and that is the best thing. There are lots of fellows who would rather go to the penitentiary itself than go to the workhouse. There are mighty good influences at the workhouse. It is worth striving for. Now, then, we want it so that it is in the power of the justice of the peace or mayor to send them to the workhouse right off, but you cannot get away from the jury if you have imprisonment. That is contrary to the constitution.

The Chair—The next paper on the programme is "Cremation of Night Soil and Garbage at Findlay," by Dr. Carrothers, member of the board of health of Findlay, Ohio.

CREMATION OF NIGHT SOIL AND GARBAGE.

By Dr. M. M. Carrothers, Member Board of Health, Findlay, Ohio.

In presenting a paper on the cremation of night soil and garbage, it may be well to call attention to the circumstances that suggested it. Findlay is located on the Blanchard river, a stream about one hundred feet in width, with a lime stone rock bottom. The drift, above the rock, is generally from ten to forty feet in depth. Through the greater part of this drift nature has deposited two layers of sand and gravel and each capable of supplying an abundance of water. There is also a good supply of water at a depth of a few feet in the rock. During the boom when houses were springing up rapidly, no questions were asked about a *healthy* supply of water, but how it could be obtained quickly and with the least possible expense. An excavation of a few feet was rewarded by a supply of what appeared to be clear, sparkling water. Not very remote from, and perhaps into the same strata of sand and water, an excavation was made for a privy vault.

The second strata of sand and gravel, at a depth of about fifteen feet, was protected by a hard-pan, and would have been a desirable water supply, had there been no invasion for other purposes. It came to the knowledge of the board of health that in a few instances, wells had been sunk fifteen or twenty feet, and had been abandoned and converted into receptacles for night soil.

The city had a very inadequate system of sewerage, to which was attached, by permission of the council, for water purposes only, a large number of closets. The outlet of this sewer system was in the river, near the Main street bridge, and nearly in the heart of the city.

The low-lands or flats along Eagle creek, a branch of the main stream, had been for years the dumping ground of the garbage and refuse from stores, streets, barnyards, etc. From the main stream and even below where the sewer emptied, winter after winter had been collected the ice crop, contaminated as it was by the drainage from this material.

A strip of timber land in one of the new additions had been used as a burial ground for dead animals. It had received the name of the horse cemetery. When Findlay doffed her village clothes and was about to take on city proportions, the timber was cleared off and the land platted and sold for building lots. An analysis of the well water in that locality would be liable to show it rich in Horseford's phosphates, peptones, debris, hair and salines.

A number of cases of typhoid fever have resulted in that addition. The people would use the water from their shallow wells in defiance of the warnings of the board of health. With these various appalling features the board had to contend, and devise some means to overcome what appeared to threaten the health and lives of the people.

We had an abundance of natural gas as a fuel, and the idea of the complete destruction of all this disease breeding material by cremation was suggested by the board of health to the council. A committee of the council visited Pittsburg and Des Moines, Iowa, and arranged for what is known as the Engle crematory. It has been in operation for over two years and is regarded as a fixed institution.

There was consumed during the year:

	1890.	1891.
Loads of garbage	3,892	3,422
Barrels of night soil	1,463	3,719
Dead horses	123	130
Dead cows	33	24
Dead dogs	91	119
Dead hogs	46	44
The cost of crematory was		$3,500 00
The cost of grounds and building		3,100 00
The cost of repairing and painting		292 21
Labor at crematory for past year		1,281 71

It is operated day and night, and we pay the superintendent and his assistant one hundred dollars per month.

The crematory consists of two furnaces. The larger furnace is called the garbage and night soil furnace. It is 22 feet long and 6 feet wide. The stock furnace is 10 feet long and 4 feet wide. They are lined on the inside with fire-clay brick. They are at right angles or in the shape of an L and joined at the smokestack.

The interior of the furnaces is divided by the grate bars, supported on piers. The grate bars are of heavy railroad iron. Fire is placed beneath the grates to aid in the evaporation of the liquid constituents of night soil and garbage, which constitutes a very large per cent. of such materials. Fire is also applied to the material to be destroyed. From this emanate smoke, gases and foul odors, which are completely destroyed in a small chamber, heated to nearly a white heat by a flame near the entrance to the stack. There is therefore practically no unpleasant odors, either from the garbage or stock furnace. There may be offensive odors in or about the building, if sufficient care is not observed as to the cleanliness and the dumping of night soil or garbage or any inattention to the prompt disposal of animal matter. There is less offensive odor emanating from the operation of the crematory than may be met with in many of the back yards of residences or that produced by a pig-stie containing one little fellow, which, boards of health are frequently required to have removed outside of the city limits. Night soil is conveyed to the crematory in air-tight barrels, and during the night. Garbage and dead animals conveyed at any time, with the restriction that anything startling or offensive shall be conveyed under cover.

It requires from thirty to fifty minutes to consume the carcass of a horse. Dropped into the hot furnace there is but one puff of smoke and that is consumed as it enters the chamber near the stack. Animal matter, when ignited, aids in its own combustion and does not require much fuel.

It is estimated that a barrel of night soil is equal to a common wagon load or cubic yard of garbage. To this I have added the number of large animals, such as horses and cows, and one-fifth the number of small animals, such as hogs and dogs, as equivalent to a barrel or wagon load. Dividing the yearly expense by the total equivalent, would make the cost of cremation about seventeen cents per barrel or wagon load. As upwards of ninety per cent. of night soil and garbage is water, it occurs to me that much attention should be paid in the construction of a crematory to an adequate evaporating surface. The management of a crematory requires good common sense. The manager must know the difference between a consuming and a melting heat. If the heat is raised too high it endangers the grates and furnace. It vitrifies the surface of the night soil, and the heat is expended on the walls of the furnace. We had a costly experience in that direction. A political favorite was placed in charge of the crematory, without regard to qualification or the application of that necessary ingredient, common sense. A creature whose belly was his god, and if he had any spirit it was of that kind that is found in the bowl. In less than three days he had seriously injured the furnaces and warped the grate bars, by raising the heat from a consuming to a melting point. Gas is the most convenient and easiest managed fuel for the purpose. I presume crude oil sprayed into the furnace would be equally as good. Coal or wood will do the work well, but requires more labor. The furnaces are so constructed that the ashes can be removed at any time while in operation. The ashes and residue from the stock furnace contain about ten per cent. of phosphates, and makes a good fertilizer. The ashes from the garbage furnace contain about five per cent. of phosphates.

The good accomplished by our crematory may not be capable of demonstration. I am not able to say how much more of sickness, or how many more deaths would have occurred had we not protected, as far as possible, our soil from pollution; and secondarily, our water supply from pollution, and the destruction of poisonous gases arising from human excrement and decaying animal and vegetable matter. We have been complimented during the past summer by the secretary of the State Board of Health, as being the freest city of its size in the State from contagious, infectious, or epidemic diseases, and that, too, in the face of many remaining insalutary conditions. We are constructing a system of sewerage which, when completed, and with proper vigilance upon the part of the local board of health in protecting our water supply and exercising a supervision over our meat and dairy supplies, with the oxidation of all our waste and refuse products, will assure us a city second to none in point of sanitation.

The growing desideratum is better sanitation. Educators are turning their attention to the prevention of disease. The physician is often compelled to admit his helplessness and mourn the inability of medical science to cope with the advancing army of germs as he stands at the bedside of his patient who has been for weeks or months slowly imbibing polluted water or inhaling poisonous gases, or trying to subsist upon that which should bless and curse not, until every fiber is tainted with decay.

There may be other means of disposing of night soil and garbage. In some localities there may be a demand for them as fertilizers. It may be conveyed away by streams to larger bodies of water, but the germs which imbedded in ice become active when liberated, may not find a grave even in the ocean.

There is a pleasing sense of security in knowing that all this disease breeding material, with all the germs for which it forms a fruitful nidus can be radically destroyed by cremation.

Prof. Nelson—I would like to ask Dr. Carrothers whether this $1,200 of expenses is over and above anything that was obtained from the parties for the removal of garbage, or whether the removal is entirely free.

Dr. Carrothers—The removal of the garbage is at the expense of the party for whom it is removed. The $1,200 covered the cost of running the crematory, and eighty-one dollars and some cents were expended for some repairs, that is, repairs on the furnace that were necessary to be made.

Prof. Nelson—Your gas is free?

Dr. Carrothers—Yes, sir.

Dr. Probst—There is a gentleman with us here to-day, Mr. Morse, who has a paper, and an interesting one, on this same subject of cremation, and I move you, therefore, that he be given time to read such parts of it as he may desire, that have not been covered by Dr. Carrothers, before the subject is discussed.

The motion was seconded and carried.

Mr. Morse—I am very sensible of the honor and courtesy you do me in allowing me to occupy your time. I should not do so if it was not for the belief that the paper will supplement, to some extent, the paper read by the gentleman from Findlay. This paper is entitled—

THE DESTRUCTION OF THE WASTE OF CITIES AND TOWNS BY FIRE.

By Col. W. F. Morse, of New York City.

In their advisory capacity, the health boards of cities and towns are responsible for their disposal of town waste.

While in some cases they are not directly concerned with the actual work of collection and disposal, and in other places by long established precedent, the board, through its president or secretary, is made the executive officer, having practical control of this branch of the city sanitation—unfairly burdening a bureau meant to be advisory in character with the work of the scavengers' department—in both instances, the health department is held responsible for the sanitary consequences that must accompany the good or bad administration of this necessary work. If, then, this health department be the recognized authority on sanitary questions arising from the collection and disposal of garbage and waste, it would seem to be useful to investigate any plan which promises to relieve the health officer from a part of this burden of responsibility, and should such investigation make it evident that the method proposed was an improvement over the present system, then it would be entirely within his province to suggest, advise and, if need be, insist upon the substitution of one for the other and the adoption of the better method.

Under the general term town wastes are included the different classes of worthless material which must be removed from communal life. Garbage, meaning all kinds of vegetable and animal matter which is putrescible. Refuse or inorganic and worthless material, which though not in itself putrescible, by its accumulation and presence becomes obnoxious. Dead animals, which in certain seasons, are many in number and demand speedy removal. Night soil, or the contents of vaults and cess-pools, and ashes, the products of combustion of coal or wood, all are classed as the waste of the city or town.

Of these, ashes, when separately collected, free from the admixture of animal or vegetable matter, can be readily used for several kinds of municipal work, and may for present purposes be omitted from our list.

Of the remainder, what is the present method of disposal? Is it satisfactory? Does it meet the requirements of sanitary law? Does it give immunity from nuisance? Is there perfect protection from possible contagion in the event of an infectious disease appearing? To these questions the answer in the great majority of cases must be in the negative. So far as an experience founded upon a study of this question for several years gives any information, it must be said that there is an almost universal complaint against the present methods in use for garbage collection and disposal, and an equally widespread demand for something better.

It is the rule in the New England States to allow the collection of garbage in cities to be fed to animals, not to milch cattle, for by law this is prohibited; but the question may be asked, how far the different boards of health have carried their inspection service for the enforcement of this law.

Is there careful analysis of milk, and oversight over the dairies of the surrounding territory to make it certain that no garbage is fed to cows? And when swine are fed with the mixed and miscellaneous refuse from large towns, is it perfectly certain that the pork, in its turn sold in the same town, is absolutely sound and good food? If the U. S. Government be not allowed to export the corn fed pork of the west to foreign countries without a special and minute examination for trichinæ, and if the reports of the State Board of Health of Massachusetts show that the increase in trichinosis in swine, fed with the garbage of the city of Boston, has risen in three years from three to seventeen per cent. then it may be doubted if this method of garbage disposal be the wisest or best.

Another way of getting rid of garbage is to haul out to farming lands for a fertilizer. The old and plausible argument of restoring to the ground the valuable product which has been taken from it, is used with great effect upon the minds of those unacquainted with this subject.

In its raw and crude state as it comes from the town, mixed with every sort of miscellaneous substances, garbage is in no condition to be applied to the soil. To be of any real use it must be treated as all crude manures are treated, the water which forms the largest proportion (from 40 to 85 per cent.) must be extracted, and the remainder subdivided and made into condition to become plant food. The cost of this process, united to the cost of transportation, together with the low value of the product as a fertilizer, renders the whole operation a doubtful investment of time and money.

Of the remaining ways of disposing of garbage we are only too familiar. The decoration of the landscape surrounding thriving towns with piles and mounds of unsightly, discarded and worthless articles, and the knowledge that below these are hidden great quantities of decaying and dangerous matter, lying in wait, until the chance comes for the development of their baneful odors—these are only too familiar features of our town and city life.

THE IMPROVED METHODS.

Of the methods looking toward the improvement of the prevailing ways of dealings with this mass of worthless waste, there are two which have been on trial for some years, and have met with varying degrees of success.

These methods are: first—the treatment of garbage by chemical process which manufactures a product therefrom; and second—absolute destruction of all waste that fire will affect and the utilization of the ashes of this combustion for a revenue.

The first method has been on trial at eight of the larger cities, with undecisive results. At five of these places the works are now in operation, and of the remainder, one only has continued in constant use since its establishment a year ago. The largest plant, costing one hundred thousand dollars for the right to use the patents and to erect the buildings and machinery, has been abandoned, entailing the loss of the whole investment. Dealing only with the putrescible household garbage, there is no attempt to dispose of any other class of waste, hence this method does not cover the whole field of disposal. The process has met with opposition more or less pronounced, at every place where used, on the charge of unsanitary condition, giving rise to complaints and expensive litigation. Requiring large and expensive plants for the work, it is necessary to organize private companies with large capital, and to obtain long continued contracts from the cities, while the small value of the manufactured product and the great expense attendant upon its production, makes the investment exceedingly hazardous and doubtful. For the smaller cities and towns this method, owing to the great expense of the plant and the comparatively small amount of garbarge to be manufactured, as well as the cost of the rights to use the patents, is impracticable.

THE CREMATION OF WASTE.

From the beginning of civilization fire has been the great purifier and destroyer of dangerous matter, and to-day the world can show no other agent which so perfectly performs this work. Abroad, in Great Britain, where the density of population brings the question of sanitation closer to the public attention, this problem of caring for worthless matter is speedily solved. There are now fifty cities and large towns using one or another form of "Destructors" or garbage burning furnaces for disposing of town waste, and yearly the number is increasing. The necessity for this method being applied is fully recognized, and the "Destructor" is a part of the municipal requirement, as much so as the modern system of electric lighting or steam heat.

In America the advance has been less rapid. Complicated by the idea that dangerous waste possesses a money value, and delayed by the system of changes in city officials in obedience to the demands of political parties—which necessitates annually a campaign of instruction and information on the part of all health officials—the adoption of cremation as applied to the waste of the community has made slow progress. But enough has been done to thoroughly demonstrate its value as a sanitary measure, its simplicity and speed when contrasted with the elaborate machinery of a "process" factory, its operation and maintenance without offense or nuisance, and its ultimate adoption by a great majority of those cities seeking relief from the garbage nuisance.

There are four different forms of apparatus used in this country for the destruction of waste by fire, each of which has been under observation for some years. Almost every month brings forward some new theoretical idea for the disposal of worthless matter, but none of these have so far upon trial, been able to stand the test of actual work.

What is needed is a furnace which shall be moderate in its first cost, substantially built of durable material, adapted to all classes of waste to be destroyed, using any available fuel, burn with speed and freedom all the daily collection of the city or town, emitting no offensive odor or smoke, be economical in operation, and produce a residuum which shall, to some extent defray the cost of maintenance. This is the destructor demanded and none but this will be acceptable. How far these condition are fulfilled by those furnaces in use can be determined by observation.

The first destructor of large capacity was the Mann furnace, a modification of the English Fryer destructor, built at Montreal in 1887, where the original furnace of this pattern is now in use. One of these was used in Chicago for several months, but was found to be of too small capacity and the surrounding approaches being burned they were never replaced and the furnace passed out of use.

The city of Wheeling, in 1889, adopted a form of destroyer built somewhat upon the plan of a Siemen's regenerative furnace, using gas as a fuel. This is still in use and is said to perform its work admirably, though no figures showing capacity or cost of operation have been furnished. But one furnace of this pattern has been built.

THE RIDER GARBAGE FURNACE.

In 1887 the cities of Pittsburg and Allegheny adopted the Rider furnace with which some previous experiments had been tried, and at both places this furnace is still in use. The Pittsburg furnace is rectangular in form, thirty feet long by ten feet wide, the interior being divided into two chambers. The front chamber twelve feet in length by six feet six inches in width and about four feet in height, receives the garbage through eight circular openings, fifteen inches in diameter, the fuel, natural gas, being introduced through pipes piercing the front wall. The second chamber separated from the front one by a heavy bridge wall is also provided with openings to receive garbage, and has in its rear a second bridge wall over which the products of combustion pass down to enter the base of the stack. Before inserting the charge of garbage the interior is intensely heated by the use of large quantities of fuel, the theory being that the complete destruction of the charge is by the reflected heat of the walls as well as by the direct action of the flame. The Allegheny furnace of similar construction though smaller incapacity, requires from 5,000 to 7,000 pounds of coke and coal for the preliminary charge of fuel. The cost of maintenance of the Pittsburg furnace seems to be an annual bill for gas of $3,600, and the services of seven men daily. The capacity of the furnace is from twenty-five to thirty tons of garbage per day, the total cost of operation being in the neighborhood of 35 cents for fuel and labor per cubic yard of garbage destroyed. The location of the furnace within the city limits and near the center of the collection field saves transportation, but unfortunately the city is not in a position to benefit by this as the garbage is now removed by a large number of private parties at the cost of the householders individually, there being no general contract in force covering the whole service under the direct control of the city, nor any system of municipal collection. It has been found impossible to procure exact figures showing the cost of the operation of the Allegheny furnace, though the claim has been made that the cost of fuel and labor are considerably less than at Pittsburg. These two furnaces are the only ones in operation under the Rider patents.

THE ENGLE GARBAGE CREMATOR.

The only other garbage destroyer which has proved itself to be worthy of investigation is the Engle garbage cremator, a form of furnace which seems to possess some advantages not included in the previous constructions. The leading principle of the Engle device is the use of two fire boxes, by means of which the fumes or gases arising from the combustion of garbage are not only destroyed, but are utilized to aid in producing heat, thus obtaining the greatest economy in fuel with the absence of noxious odors.

The Engle cremator of the larger size is a rectangular brick structure, 35 feet long, 10 feet wide and 12 feet high. At one end is a chimney on an iron stack 75 to 100 feet high. The top of the furnace is provided with four circular openings, one being large enough (34 inches in diameter) to receive the carcass of a horse. There are platforms at the sides a little above the level of the top of the furnace, which slopes leading to the feeding holes. The driveways admit to these platforms on both sides, allowing the free access of the collection carts. Over all is a covering house with sliding doors and iron roof.

Below the platform in one side the furnace at each end, are large doors for fuel, along the same side at the bottom are a range of ash pit doors through which the ashes are removed, and above these another range, called stoke doors, admits of the introduction of bars and pokers to stir up the garbage.

Inside half way from top to bottom are set the garbage grates which receive the material fed through the large feeding holes above. The two fire boxes at either end of the interior are on a level with this garbage grate.

Below the garbage grate is a hearth dished or sloped to the center, which catches all liquids passed through the feeding holes and garbage grates, and underneath this is a long flue or combustion chamber connecting with the base of the chimney, controlled by a heavy damper. A similar damper governs the admission of heat from the principal chamber above.

The furnace being charged with the requisite quantity of garbage (say 10 cubic yards) the flames from the fire box nearest the chimney (the upper damper being closed) pass over and through the garbage driving the smoke and gases into and across the second fire, where they are consumed. The flames from this fire passes down the outside and under this second fire box and are by the action of the draught brought back under the garbage grates on their way to the chimney where discharged.

By the action of this returning fire the liquids in the hearth are evaporated and the solid particles burned, the odors of combustion passing through the second fire. The ashes as they fall through the garbage grates are raked out through the lower range of doors, and from time to time the garbage is stirred up and distributed over the grates through the upper range of doors.

The action of the furnace is continuous, and may be carried on for months without cessation. A part or the whole of the garbage grates being made of pipes with a circulation of water, there is always hot water for cleaning purposes, or steam power can easily be supplied by these grates or an attached boiler.

The construction of the interior walls are of the most solid and massive character. The fire-clay brick are of large size, 12x9x8 inches, all the openings being protected by solid blocks shaped to fit the apertures. Outside heavy iron buck stays, thrust bars, tie rods and bolts hold every part firmly.

There are four sizes of these cremators built for public use, adapted to places from 2,000 to 30,000 inhabitants. For the larger cities an additional number are required, usually placed at different points to save transportation of garbage.

The cost of operation depends mainly upon the quality of fuel employed, and, of course, upon the character of material destroyed. Experience shows that in the Southern States, using pitch pine wood for fuel and the labor of three men, an Engle cremator of the largest size will destroy from 65 to 85 cubic yards of the miscellaneous garbage, refuse and dead animals found in the average daily collection during the summer months, at a cost of 16 to 19 cents per cubic yard for fuel and labor. When night soil is burned, containing from 10 to 30 per cent. of liquid the cost is nearly the same per barrel of night soil as for a cubic yard of garbage. Not so much labor is required but rather more fuel. At other places using natural gas, the expense is diminished, and when coal of a good quality is employed the cost is from 12 to 15 cents per yard and barrel, so that the expense of maintenance when the quantity and kind of material to be destroyed is known can be approximately ascertained. But no exact figures can be given until the experiments are conducted at some point where the collection is a positively known quantity of an unvarying quality, unmixed with ashes or any non-combustible substance, and delivered with unfailing regularity.

The ashes of garbage have a positive value. Analysis shows they contain from five to twelve per cent. of potash and phosphoric acid, being nearly equal to the Canada wood ash of the same bulk. Experiments at several places have demonstrated their practical value to be even more than has been claimed for them.

The destruction of night soil in furnaces of the Engle pattern has been most successfully done wherever it has been found necessary. It involves a change in construction which provides a receptacle for the liquid and the application of the flame and heat in such a way as to concentrate the greatest power upon it. In several places where little or no sewerage facilities exist, special furnaces are built to destroy this dangerous matter, and the work has been carried on continuously. At other points where the amount of excreta is small, it is destroyed after the combustion of the garbage, in the garbage cremator.

As a rule, where the amount of night soil is considerable, and likely to be continuous for a long period. it is better to build special furnaces for its destruction, and operate them when required. The same furnace will burn garbage and refuse, though not in quite so large quantities in the same time as the regular garbage cremator.

To summarize the work of the Engle cremators, it appears that since 1886, when the first one was built at Des Moines, Iowa, there have been twenty-six different cremators of this pattern constructed at nineteen different places, ranging in locality from Panama in Central America to Butte City, Montana, and from Coney Island, N. Y., to Tampa, Florida. Of these there are now seventeen places where the cremators have been in constant use since completion. Of the two places that have ceased to employ them, at one (Milwaukee) the furnace passed into the control of parties interested in showing that garbage cremation was a failure, and who suppressed the furnace and spread abroad the report that it was unsuccessful and abandoned.

In the other case (Minneapolis) a cremator was successfully operated some months, and finally removed because of its unwise location at a point necessitating the hauling of large amounts of garbage through the main business thoroughfares. This same city, after an extended investigation and rejection of other methods, has again voted to cremate its waste, and to build in a better place a large size Engle furnace.

With the exception of these two cities the cremators built by this company have continued in constant use since their establishment. It appears of the seventeen cities and towns using these furnaces, three have replaced the small cremators first built, with larger and improved ones, that four places erected at the beginning two furnaces, for garbage and night soil respectively and that in nine places both garbage and night soil are destroyed in the same cremator with entire success.

The United States Government has adopted the Engle furnace at two of the government posts for the destruction of the night soil and garbage; and the city of New York has had in use for three years, a furnace built to destroy clothing, bedding, furniture and infected articles from any contagious diseases, as well as all the dangerous waste from the hospitals. This work has been done with the most perfect satisfaction and there can be no doubt but that the prompt destruction of these matters has greatly aided the health department of that city in stamping out the first appearance of all contagious diseases, and saved the risk of contagion and the great expense formerly incurred of transporting this matter nearly twenty miles before it could be disposed of.

Finally, there would seem to be no valid reason why this method of caring for the waste of cities and towns should not be brought into general use at every place where the matter of garbage disposal gives trouble. If the cities of Great Brittain, after an experience of twelve years, continue to employ fire as their agent of destruction, multiply their furnaces, and according to their official reports commend cremation as "not only practicable, but is the best and often the only way of dealing with town waste in a manner to satisfy sanitary requirements," and if, as has been repeatedly stated by health officers and city authorities, where the American forms of furnaces are in use, that this method meets the wants of their communities by its efficiency, sanitary helpfulness and economical work, then it would seem to be the duty of those charged with the care of the public health to examine with some degree of interest this new form of sanitary appliance, that they may be prepared to advise intelligently, should the necessity exist for present action, or the future bring with it any demand for changes from the antiquated, dangerous and offensive methods now in general use.

The Chair—We have another paper here bearing somewhat upon this same subject by Dr. Reed, of Mansfield, which we will now hear:

HOW CAN WE CONTROL THE PRIVY VAULT NUISANCE?

By R. Harvey Reed, M. D., Health Officer, Mansfield, O.

The Secretary of the State Board of Health no doubt has long ere this appreciated the practical difficulties, coming from the different parts of the State, in getting rid of the omnipresent privy vault nuisances, and no doubt as a consequence has written me some months ago, inviting me to read a paper at this meeting, and suggested this topic for our consideration.

That he has struck on a practical subject is beyond a question. That he has suggested a topic that should interest every citizen in the State of Ohio is without a doubt. That he has invited me to open the discussion on a question that constitutes perhaps, the greatest nuisance in the Buckeye State (saying nothing of the rest of the country) is beyond a peradventure.

To me it has always been an unsolved problem, why the average citizen is so careless in reference to the care of the effete matter of his economy, which in order to be healthy, must be expelled from his system every day. Travel where you please from the swampy plains of the western portion of our State to the rugged highlands of our eastern borders, or from sparkling Lake Erie, to the turbid waters of the Ohio, and you will find that with very few exceptions the water closets and privy vaults of our State, are simply rude excuses of the most temporary character, which are intended to accommodate a business of most permanent character.

In fact they are but rudely constructed shells, cold and uncomfortable in winter, hot and offensive in summer, built over a mere make-shift of a vault, which is usually cased with the cheapest of timber (if cased at all). Usually located at some out of the way place, often beside some hog pen or chicken coop, possibly at the rear of the garden or back end of the lot, (if in a town or city), and usually located regardless of the well or cistern from which the family must obtain their daily supply of potable water.

I say, with me it is an unsolved problem, why people should be so careless about such an important question. The same person would howl with indignation if they were compelled by the State Board of Health to use such shells as they usually construct for their privies, even if free from fecal or other contamination, to but only wash their face in once or twice a day the year around, or if they were compelled once a day during the winter season alone, to sit with a portion of their face, their back or their breast exposed to the cold winter winds for a few moments only, they would very soon charge up a cold in the head, a case of rheumatism or acute pneumonia, to such exposure; yet they insist without reason or necessity to use water closets where another portion of the body must be exposed once or more during every 24 hours, for a period, varying from a few moments to several minutes, to the cold winds of a northern winter, and then wonder why it is they catch cold and their wives and daughters suffer from vaginal or uterine catarrh, or that the male portion of the family in common with the gentler sex suffer from rectal or vesical irritation, or possibly acute prostatitis in the male and ovaritis in the female. .

There is no use of mock modesty in these questions, which contribute so largely to the health and comfort of every citizen of our State. But we should look them squarely in the face and discuss their various phrases carefully and conscientiously, as well as practically in order to determine "how we can control the privy vault nuisance" to the best advantage to all concerned. In order to do this intelligently it has been necessary to point out to a certain extent, a few of the many difficulties, which are the legitimate results of these nuisances.

Having merely touched on a few of these objections we next come to the question proper of how to control them?

1st—In the construction of an ideal privy, it should be so constructed as to not only protect the party who uses it from dangers to health, but the soil around it as well as any neighboring well or subterranean stream of water, the cellar or the open air from any possible chance of infection. 2d—It should be so constructed as to be comfortable to those who are obliged to use it, whether in winter or summer. 3d—It should be convenient.

In considering this problem it is necessary to take into consideration how many are to use the privy; that is to say whether it is for the use of a school building, a church, a court house or custom house, a factory, a city flat or an individual family. If it is a school building then there is no other closet that I consider so nearly perfect as the so-called Smead "dry closet," which embraces all three of the requirements I have suggested, viz.: Sanitary protection, comfortableness and convenience.

If, on the other hand, it is to be used by a congregation, which, as a rule, only occupy their church once, twice, or three times a week, then, I would suggest, where it can be obtained, that an improved "water-closet" be used, and by this I mean a urinal and fecal basin, which can be kept clean by a liberal flushing with water after each time it is used, and so trapped and ventilated as to absolutely protect the room in which it is placed from any contamination whatever. In country churches, however, which cannot avail themselves of "water privileges," I would suggest the use of the ordinary "dry closet," which is cheap, convenient, and easily kept in a sanitary condition.

In supplying a factory or manufacturing establishment where a large number of men work, I would also recommend the use of the Smead

" dry closet," as being preferable to anything else, where it can be adopted, as such closets can be placed at a convenient point in the building, and not only be kept in a sanitary condition, but at the same time be comfortable and save the employes much loss of time by running out of the building and back again every time they desire to "relieve nature." Especially are these closets desirable for moulders and those who are exposed to a high temperature, or where the physical labor is such that they are kept in an almost constant perspiration; for by the use of these closets, which are warm and comfortable, the employes are less subject to catching cold or of contracting pneumonia than where they are obliged to go out of doors in this heated condition, and use cold, uncomfortable, filthy privies, as is usually found under these circumstances at the present time. We are firmly of the belief that the construction of such closets by every manufacturing company to be economy; not only to the company, but alike to the employes. 1st—By the simple saving of time. 2d—By the prevention of sickness and disease.

If the Smead "dry closet" cannot be used, then a closet should be constructed at some convenient place which can be kept warm, and constructed with a double row of individual seats, so arranged with a partition between each row, and each seat so that the occupants will sit side by side and with their backs to each other. By this method the fecal matter is deposited into the trough, which should be at least a foot or eighteen inches in depth, containing at least from ten inches to a foot of water, which should be so constructed as to be used during the day and each evening washed out and fresh water supplied, after the contents accumulated during the day has been allowed to escape into the sewer. This same closet can be arranged for urinal purposes by having the lid of the seat for each person attached to a hinge so that it can be raised up when desired to be used for micturation only. A closet so constructed is cheap, can be kept perfectly clean, without the least possible smell, and can be placed in a convenient portion of the building, and where there are water privileges, ranks second in my judgment to the so-called Smead dry closets, although they take more trouble to take care of them than the former; yet they are cheaper to begin with, and if properly cared for are not at all objectionable.

The idea so prevalent among manufacturing companies that any kind of an old shed stuck off at one corner of the lot on which the building stands, with a stinking, filthy vault, usually nearly filled up with decayed feces and so offensive as to disgust the refined senses of a country shoat is worthy of the severest criticism and condemnation.

I have investigated many of these privies in different parts of this State and as a rule find them little better than the old rail and pit used during the war for the soldiers in their camp grounds, and the sooner our State Board of Health takes hold of these matters and not only educates the people to a higher standard of refinement in these cases, but compels them to abandon these unsanitary, uncomfortable and inconvenient privies and adopt improved methods the better it will be for all concerned, whether a manufacturing company, a railroad, a school-house, a church or any other public building.

Repeated investigations of the average business blocks reveal the astonishing facts that whilst they are intended to be occupied not only by the proprietors themselves, but a number of clerks or salesmen as the case may be, yet many of them have no provision whatever, in the way of water closets, or if they have, they are generally inconveniently located in some dark obscure corner of the building, where a majority of those who occupy the building must either run up or down one, two or three flights of stairs in order to occupy the closet, which is not only inconveniently located, but cold and often improperly trapped and ventilated, and in a filthy condition. Buildings of this character, if heated by a furnace should have a comfortably located closet so arranged on each floor, where such is needed, that the alvine discharges would be immediately deposited in the furnace and cremated according to the method recently devised by Col. Smead, of Toledo. If this cannot be done, and water privileges are obtainable, then I would advise having a small room set apart for this purpose on each floor, which should be so located as to be comfortable in either winter or summer and the "stool basin," connected with the public sewer, but so trapped and ventilated as to be absolutely safe from sewer gas, and in addition to this be kept clean and in a perfect sanitary condition.

If either one of these systems of caring for the fecal discharges is adopted and properly cared for, there need be no trouble about their convenience, their comfort, or their sanitary surroundings.

If, however, neither one of these former plans can be utilized, then suitable "dry closets" should be placed in the most convenient location (the special construction of which will be described later on in this paper), and made in such a manner as to be well ventilated and as comfortable as possible during any time of the year, and especially free from drafts during the winter season. By proper care of such closets, even where they are used by a number of inmates, they can be kept in a perfectly sanitary condition, but like everything else of this nature requires care to keep them so.

As a rule, however, you will find closets connected with business blocks filthy, because nobody cares for them or tries to keep them in a proper condition, and when you notify the tenants they refuse to keep them so, because they are paying rent, and claim that the landlord should attend to these matters, and when you notify the landlord, he will retort by saying that if the tenant is not satisfied with his surroundings and accommodations he can move out; neither one of those excuses, however, are satisfactory to the health department or those who are obliged to use these closets every day, and fall short of meeting even the ordinary requirements of a well organized health department.

The so-called "flats" present another, troublesome class of buildings for the health department to look after in reference to privy accommodations. They are very much similar to the business blocks we have just described, with the exception that they are usually divided up into more separate departments, each representing a private family, who as a rule desire to be as distinct from his neighbor as possible; whereas, the business blocks are not usually divided into so many integral parts of representing separate and distinct interests. In reference to the remedying of this class of buildings I would make the same suggestions as I have already made, only so modified as to accommodate the peculiar conditions of this class of buildings.

No court house, custom house, or state house should be allowed to be constructed now-a-days that is not amply provided with all the modern appliances for heating and ventilating, together with the necessary, convenient, comfortable, cleanly and strictly sanitary water closets for the accommodation of all those who may be required to occupy these buildings.

This class of buildings, which are occupied almost continuously, should be heated by air warmers that are capable of supplying a bountiful supply of pure, warm, fresh air to every department of the building, and at the same time be so constructed as to remove all the foul or cold air as rapidly as it collects. They should also be supplied with the Smead dry closet, which can be so constructed as to accommodate any number who may occupy the building, and which can be conveniently located as well as kept comfortable, cleanly and in the highest degree of sanitary perfection, with practically little or no expense either summer or winter. That this class of buildings are as a rule not only poorly heated, and illy ventilated, but supplied with poor, uncomfortable water closets is beyond a question. In fact, they are the most expensive buildings in our country built with an eye singular to external beauty, whilst sanitarily they are little short ot mere death traps, usually heated from day to day by steam with no ventilation; with dusty floors and dusty walls, which are seldom swept or cleaned, within which the clerks are confined year in and year out, and under these unsanitary conditions are expected to give the highest class of service to the State under the lowest possible sanitary surroundings.

We have purposely left to the last the most important paragraph of this paper; not that each individual case is of more importance, but because it represents an aggregate of much greater dimensions than any of the former.

It seems almost useless for me to call the attention of the members of this Convention to the special construction of the average water closet used by the average citizen of this or any other State in the Union. That they are cold in winter and hot in summer, is beyond a question. That they are uncomfortable and filthy all the time is self-evident. That they are usually inconvenient needs no proof, but simply an inspection, and that they are cared for less although used much more, than any other department of the household of the ordinary family is beyond a doubt.

I a-sume that there is not a health officer present here to-day, who has been on duty in that capacity for a year only, who has not seen one or more instances of sickness or even death attributed to these murderous agents, that are not only tolerated but harbored by almost every citizen in the State. Take for instance the prevalence of typhoid fever, which was unusually marked in many localities during the past season, and which to a large extent owed its existence to the universal prevalence of these poisonous pits, which together with the dry weather allowed the leachings from these vaults to become more concentrated as they found their way through the soil to the scanty supply of water in the neighboring wells, from which the people obtain their drinking water.

This brings us to another point, which is well worthy of our attention; and that is to "show up" the fallacy of the old mathematical legend that a well or other hole in the ground only drains a radius equal to a diameter of twice its depth.

Our farmer friends have practically proven the fallacy of this antiquated theory, and have shown by the tiling of their lands that a tile drain of ordinary depth, say a foot and not to exceed two feet will drain a section of ground for 30 feet on each side of the drain; or in other words they place their lines of tile 60 feet apart and not to exceed two feet deep, and yet in this way they will drain perfectly the entire surface between the two lines of tile, which according to the old theory should only drain the land for a distance of two feet on each side of a drain that is two feet deep.

Now let us go back and apply this principle to the water closets, not only in our cities and towns, but in our farming community as well. Take an ordinary village of from 500 to 2,000 inhabitants, and the soil of that village is as full of these death traps as a pepper box lid is of holes; intermingled with which, are their wells of water varying from 20 to 100 feet in depth which are seldom to be found over 200 feet from one or more privy vaults, and yet these citizens wonder why the Lord has visited them with a scourge of typhoid fever, or chastised them for their iniquities by an epidemic of diphtheria; yet to the sanitarian, who takes a common sense practical view of the situation it is just as plain and easy to answer as it is to tell why a man dies, when he is suspended by a rope around his neck, which shuts off his wind.

For instance, if a drain one foot deep will drain 15 feet on either side of it or in all 30 feet of soil, then a well 50 feet deep would drain a radius of at least 1500 feet; or in other words, a water closet 750 feet from this well would be liable to contaminate it with its leachings in the course of time, saying nothing about the possibility of our wells being supplied with subterranean streams of water, which may pass under a score of these water closets, which may be a mile or more away, and thus become contaminated and unfit for use by the filtering of these foul receptacles.

Again, our farmer friend, who from practical experience as well as economy knows that it is not necessary to place the lines of tile more than two feet deep, or closer together than 60 feet, yet on the other hand he will dig a well 50 feet deep that is within 200 or even 100 feet (often very much closer) to a privy vault that is nothing more than a hole in the ground for the deposit of the foulest concoctions that is possible to be collected in it, which is allowed to filter year in and year out through the surrounding soil into his well.

The same farmer seems to forget in locating his well and privy vault the principle he applies in the tiling of his land, and does not stop to consider the danger to life and health, of himself and family, or if so, he does not consider them as valuable as the crops he raises off of properly tiled land, or the money he saves by discarding the "old rule" of drainage, by adapting the new, which saves him thousands of dollars in the tiling of his farm, as well as serves him every purpose that tile placed closer together would.

Probably he does not understand that these poisonous germs do not lose their vitality by filtering long distances through various stratas of soil. If he does not it is time he should be acquainted with this fact and discard the old theory that filtration and aeration do not kill the germs of disease that have found their way into his drinking water, and give him healthy potable water.

Having shown briefly some of the dangers connected with these abominable privy vault nuisances, we now come to the question of "How to control and prevent them?"

First, in the cities where there are water and sewer privileges, I would recommend that the common privy vault be absolutely abandoned and prohibited, by fine and imprisonment if necessary, and that either sanitary connections with the sewer be adopted, and such connection made with every residence, where it will be practical, or that the ordinary "dry closet" be adopted where sewer connections and water privileges are not available. By the "dry closet" I mean comfortably constructed buildings, located at some convenient place near the building, and that instead of using the ordinary vault it be so constructed as to allow of the use of an ordinary vitrified three to six-gallon crock to be placed under each hole in the privy in such a manner as to catch all the fecal and urinal discharges without contamination of any other part of the closet, and that each time after the use of these privies the parties using them be required to throw a small scoopful of ashes or dust over the discharges just deposited in the crock, and in this manner the closet can be kept free from offensive odors, and can be easily and cheaply cleaned, and all contamination of well water absolutely prohibited.

In the place of a crock, a large bucket of galvanized iron with a suitable bail can be used, but the old-fashioned method of making these "dry closets" with wooden drawers should be abandoned, as the wood is liable to soon rot and thereby permit leakage of their contents into the soil, or the building or both.

These closets can be constructed much cheaper than the old-fashioned vault closet, and owing to the method of their construction can be placed in a much more convenient position than the former, and are certainly much more comfortable in winter as well as in summer, if properly constructed; they are much easier cleaned, which can be done a great deal cheaper and easier than in the case of the old-fashioned vault closet.

All that is necessary in cleaning a dry closet is simply to take out the crock or crocks which are full and replace them with the empty ones, which can be done without disturbing their contents in the least until it is taken to the place where it is to be deposited, when the crock or crocks can be cleaned and afterwards kept in readiness for another cleaning of the closet and exchange of vessels, which should be done as often as necessary as the case requires which seldom exceeds twice or three times a year in ordinary families.

Those who have had any experience in cleaning the ordinary privy vault are familiar with the fact that it is not only filthy but *offensive*, and an *expensive* job to all concerned, and usually costs the owner from five to ten dollars for each cleaning. This expense and trouble can readily be prohibited by the adoption of the "dry closet," which can be cleaned at an expense not to exceed one or two dollars each, without any trouble or offensive odors, which are usually so prevalent in the cleaning of the ordinary privy vault.

I perhaps should add here that in the construction of the "dry closet" provision should be made for keeping a quantity of dry ashes or dust at some convenient place in the closet, supplied with a small tin scoop, in order that the ashes or dust may be easily dusted over the stools after each time the closet has been used.

In concluding this discussion of "How can we control the privy vault nuisance?" I would suggest that we control it by *abandoning it entirely*. By this I mean that the State Board of Health should pass rules and regulations prohibiting the construction or keeping and maintaining of any privy vaults under any circumstance whatever, and if they have not the power to make such rules and enforce them, then we should ask our legislature to pass a law which would give them that power beyond a question.

The day for maintaining any known nuisance should be classed with the history of the dark ages of sanitary reform and anything that contributes so clearly to the developing and maintaining of sickness and death, as does the privy vault nuisance, should be condemned at once, and the most vigorous steps be taken to prohibit it, for if there is any one *common nuisance*, that does interfere with the public health throughout the State, certainly the privy vault nuisance stands pre-eminent.

It is not necessary that the board of health should enforce any particular system of water closets or privy vaults, but simply recommend from time to time what they consider the best, the least offensive and the most practical.

This is a day of progress, and whilst we may consider the present so-called Smead "dry closet" as pre-eminent to-day, some new invention may supersede that, just as far as it supersedes everything else at the present time; or on the other hand I would not recommend the adoption of any particular make of water closets to the exclusion of all others, but simply would recommend from time to time what may be considered the best at that time and leave the matter open for improvements, and the future adoption of such improvements as may come up for consideration in the future. The same remarks hold good in reference to the "dry closet" and whilst it is the best system that we know of at present, to take the place of the old fashioned privy vault, yet we are in hopes that something still better may be presented to us, and that we may be left free to choose it if we desire; but I would recommend and urge on every health officer, and every member of every board of health present, including the State Board of Health, that they "pool issues" in prohibiting the construction or even maintaining the privy vaults in any portion of the State, under any circumstances whatever, in the belief that in so doing they will be protecting the public health by promoting the greatest good to the greatest number of the citizens of this great and progressive Buckeye State.

Prof. Nelson—I have no doubt there are many points in this paper which would awaken discussion, but there are many of our members who feel that they will have to retire soon, and I move you that we hear at once the last paper upon the programme.

The motion was seconded and carried.

The Chair—The paper is on the subject—

WHAT SHOULD BOARDS OF HEALTH DO TO PREVENT CONSUMPTION?

DR. EDWIN LE FEVRE, H. O., Sidney.

Consumption is the arch enemy of mankind. It has come down to us from the days of antiquity and has spread into every part of the globe where the conditions are such as to permit of its existence. There is scarcely a community in the civilized world where it is not constantly to be found and in nearly all our mortality tables it leads with the greatest number of victims. It is said that three thousand people die every day in Europe of consumption. I have seen no reliable statistics in regard to the United States, but it is probable that the number who die annually from this cause is not short of one hundred thousand. Dr. B. W. Richardson says that one-tenth of all the inhabitants within the temperate zone die of consumption, and this is regarded as a very conservative estimate.

What an army with pallid faces and emaciated forms marching to the spirit land.

The bacillus tuberculosis is a very innocent looking organism as we see it through our microscopes, but what a factor tor suffering and sorrow it has been in the world's history.

But we are here to discuss the practical side of this question—what can we do to circumvent this universal scourge and prevent its inroads on humanity? To be more specific—what can boards of health do to prevent consumption? Practically, in this State they are doing little or nothing, but I believe they can and should do something in this direction.

I shall not waste any time in citing evidence to prove that consumption is a communicable disease. That fact now seems to be almost universally accepted. The medical profession and leading scientists of the world who have made a study of this question now believe that consumption, and by consumption we mean that form of disease characterized by the formation of tubercle and the presence of the specific germ, is, under favoring conditions, communicable from man to man and between man and animals. The title of my paper presupposes that consumption is a contagious disease and therefore a preventable one. What can we do therefore as boards of health and health officers to prevent its spread? It is now well demonstrated that the chief source of infection is the dried sputa of tuberculous patients, and the knowledge of this fact must largely govern us in our efforts to stamp out the disease. If all the expectorations of consumptives were burned or disinfected before they become dry, the chief source of infection would be eliminated.

Unfortunately in the great majority of instances this is not done, and boards of health are powerless to enforce such hygienic measures as are necessary to protect the healthy.

Public sentiment and humanitarian consideration do not as yet admit of the complete isolation of phthisical subjects. Hence our efforts in this direction must be largely of an advisory and educational nature. We should lose no opportunity to educate the people as to the nature of tuberculosis and the methods of its dissemination. Every person should know that a consumptive patient is a dangerous factor to his family, and the community, unless the proper precautions are used.

When such patients are confined to the house they should be taught to expectorate into pasteboard or wooden cups, which together with their contents should be burned daily. When they are able to go about they should be instructed never to expectorate on the street, or floor of any building, but upon cloths which should be burned as soon as possible, or if handkerchiefs are used these should at the earliest moment be soaked in a bichloride solution and then boiled and washed. The point to be always kept in view is that the sputa should never be allowed to become dry and thereby disseminate the germ through the atmosphere.

So important is this that a writer on this subject has summed up the prophylaxis of pythisis in these five words, "keep water in the spittoon."

A careful investigator is authority for the statement that a tuberculous patient expectorates from two hundred and fifty thousand to four billion bacilli in twenty-four hours. It may, therefore, be seen what a dangerous factor he may be to those about him if no effort be made to render his sputa innoculous. The bowels are frequently the seat of tubercular disease, often made so no doubt by swallowing the sputum, and may, therefore, become a source of infection unless all discharges therefrom are thoroughly disinfected, All rooms occupied by consumptives should, from time to time, be carefully cleaned and disinfected, and this should always be done after they are vacated and before they are again occupied by other individuals. I wish to quote the following excellent advice bearing on this point from a circular issued by the Pennsylvania State Board of Health: "The duster, and especially that potent distributer of germs the feather duster, should never be used in the room habitually occupied by a consumptive. The floor, woodwork and furniture should be wiped with a damp cloth. The patient's clothing should be kept by themselves, and thoroughly boiled when washed.

It need hardly be said that the room should be ventilated as thoroughly as is consistent with the maintenance of a proper temperature. I will also add in this connection that persons should be warned in sleeping in a room occupied by a consumptive, and children and persons predisposed to the disease should be kept away from them as much as possible.

Boards of health should protest against the admission of consumptives either as teachers or pupils into our public schools. The school room is no place for a consumptive, and for that reason, together with the danger of infecting others, they should be rigorously excluded. This leads us to say that consumption should be made returnable to boards of health just as are other contagious and infectious diseases. In order for boards of health to lead a successful crusade against tuberculosis it is necessary that they know just where it exists. If we know the whereabouts of these patients, we could encourage and often secure such regulations of their home life as would prevent the infection of their families and friends, and could follow them, so to speak, as they go out to meet and mingle with the outer world and endeavor to overcome those habits and conditions which we seek to prevent in their homes.

Offices, stores, factories and all places where employes or the public are wont to resort may become centers of infection if the proper precautions are not observed. Dr. Marfan, of the faculty of medicine, Paris, is authority for the details in the following case: In a mercantile establishment in that city twenty-two persons were employed, one of whom had phthisis and continued to work until within three months of his death, which occurred in 1878. Since that time out of twenty-two persons employed fourteen have died of pulmonary tuberculosis.

It is proper to add that the room in which these people were employed was badly ventilated and badly lighted, and the air space was insufficient. The condition of the floor was such that it could not be thoroughly cleansed, and the person who appears to have been the starting point of the epidemic and those who followed him spat directly on the floor. The room was swept each morning and sometimes the employes arrived before the sweeping was finished, and while the poisonous dust still floated in the air. Such cases as this not only prove the contagious character of the disease but point out very forcibly to the practical sanitarian the methods necessary to prevent its propagation. Railway coaches are frequently poisoned with the germs of tuberculosis and are no doubt often the means of disseminating the disease. Out of sixty million people in this country it is said that fifteen million are traveling all the time, including those who travel by steam and ferry boats; one-fourth of our population is on the cars or steamboats every day. A certain per cent. of these are tuberculous, as a matter of course, and in many instances their expectorations go directly on the floor. We can all bear witness to this fact. I never enter a car without a fear that perhaps I am breathing the germs left by some tuberculous patient, and this fear is greatly augmented when at certain important stops the car is swept, with the result of setting the dust and dirt on the floor in motion. The chief source of danger in this matter could be avoided if these corporations were compelled to furnish their coaches, and waiting rooms as well, with cuspidors. These with little extra trouble could be frequently disinfected and cleaned, and a great source of infection would be removed. I am aware that the local boards of health are powerless to act in this matter, but State boards or legislative enactment might accomplish the desired end.

We have yet to speak of another means by which the baccillus tuberculosis gains entrance into the human organism—namely, by means of the meat and milk of tuberculous animals, the alimentary canal being the part first invaded by the germ.

Frequent analysis made of milk from tuberculous cows, both in this country and Europe, have shown their milk to contain the characteristic bacilli. All boards of health should, and do if they are at all efficient, investigate the milk supply of their respective towns and cities. This investigation should not begin and end with testing the milk sold by the dairyman to see if it is adulterated, but should begin with a careful examination of the cows that furnish the milk. The diagnosis of tuberculosis in cattle is not believed to be a very difficult matter. The symptoms to be noted are emaciation, cough, irregular respiratory movements and tumefaction and induration of the retropharyngeal and mammary glands. Boards of health should see that all cows showing evidence of tubercular infection are condemned at once. We have the power to see that this is done, and come short of our duty if we fail to protect the community in this way. The cruel practice of confining cows in hot and filthy stables for weeks and even months at a time, renders them more liable to tubercular as well as other diseases. The recent order by a board of health in this State, that all milk cows should be daily taken out into the fresh air and sunlight, is one which should commend itself to every health officer in the land.

As the parasite of tuberculosis may infect the muscles and blood as well as the milk of animals which serve as food for man, boards of health should endeavor to prevent the sale of meat from infected cattle, and the public should be informed that the only sure way of safety lies in subjecting all meat to a thorough cooking before being consumed.

Upon the discovery of Koch's bacillus and the announcement of the fact that tuberculosis is a contagious disease, it was asked by those who sought to oppose this theory—why is it that we do not all become tuberculous? The answer to this is a very reasonable and satisfactory one, namely, that comparatively few persons present the proper soil for the growth and developement of the germ. None of us perhaps have escaped taking into our bodies the bacillus tuberculosis, but either because we have not received it in sufficient numbers or because we have not furnished the proper conditions for its development, we have escaped the disease. While it is not probable that tuberculosis is ever directly inherited, it is now generally believed that in order to contract the disease there must be a predisposition to it. That this predisposition is hereditary in many cases is doubtless true, but it may be acquired at any time in life.

Just what it consists in would be difficult to say, but we do know that certain conditions, such as the scrofulous diathesis, anæmia, or general bodily weakness, abnormal chest formation with limited activity of the lungs, catarrh of the upper air passages, bad hygienic surroundings, etc., are favorable to the development of the tubercle.

These views now generally accepted open up another line along which we can work to prevent the spread of tuberculosis—we should endeavor to prevent or remove those conditions which render its existence possible. The statutes make it obligatory upon boards of health to look after the sanitary conditions of our schools and school buildings. We should see to it that pupils in our public schools are not trained in intellect at the expense of their physical structure. Sound minds are of little value to the community unless there is a sound body as well. We should see that our schools are properly ventilated and heated, and that they are not overcrowded, and should insist on their being swept after school hours instead of just before as is often done. We should also see that vocal culture and calisthenic exercises are a part of the system of instruction in all our schools.

It is my opinion that a person who enjoys fair health and who makes it a daily practice when in the fresh air to expand his lungs, is not likely to become the victim of consumption. In a somewhat extensive experience in making physical examinations I have been impressed with the seeming inability of many people to properly expand their lungs. It is a habit which when once formed is likely to be adhered to, and its importance should be impressed on every pupil in the schools of this State. There are laws on our statute books looking to the prevention of an unsanitary condition of all manufacturing establishments, and the overcrowding of tenement houses. Boards of health should see that these regulations are enforced as far as possible. Statistics for some of our city hospitals show that a large per cent. of the patients admitted with phthisis are persons, especially young women, who came from the country to work in factories and who first became anaemic as a result of bad hygienic surroundings, and finally tuberculous.

To sum up briefly what boards of health should do to prevent consumption, we would say: 1st—In every way possible educate the public as to the true nature of the disease and the means of preventing its spread, and to so regulate the habits and lives of those affected as to prevent their becoming a source of infection to the healthy. 2d—By careful investigation of dairies, and the condemning of all cows believed to be tuberculous, and the prevention of the sale of tuberculous meat and milk. 3d—By securing such sanitary conditions and regulations in our schools, factories and homes as will have a tendency to remove or prevent any predisposition to consumption, especially among the young.

It is believed, and not without reason, that by enforcing a system of rigid prophylaxis, tuberculosis could be absolutely stamped out of existence after three or four generations. Is it not a consummation devoutly to be wished, and one worthy of the best efforts of every sanitarian?

The Chair—Gentlemen, we have had several very important papers read this morning that would, no doubt, if the time were favorable, give us a field for discussion; but as you all see it is twelve o'clock, standard time, and I think we will have to waive the discussion of these papers.

Dr. Probst—I will say, Mr. President, that all the papers will be published, together with the discussions, so that every one in attendance will receive a copy.

The Chair—On behalf of the State Board of Health, I would say that we have much to congratulate ourselves upon in the splendid attendance at this meeting, as well as the work that has engaged us. We have had a high order of papers, and the subjects have been fully discussed, except this morning, and it will certainly be a source of great benefit to the sanitary conditions of the communities that have sent representatives. We hope that the good influence may not end with this meeting. We hope to be able to continue these meetings from time to time, perhaps annually, and we hope that we will have every board in the State represented at these meetings.

Mr. Reed—I would make a motion to this effect, that it is the sense of this meeting, and that we, as representatives of the different health departments of the State, make a request of the State Board of Health, that they make arrangements for meetings of this character at least once a year. I know from experience that the preceding meeting was a great benefit to our city. I don't think there was a single meeting of our board of health last year that some member did not bring up and discuss some subject brought out at the last meeting, and I don't think any one regretted the expense of coming here. I feel this matter is of such importance that we should encourage it, and every health officer should attempt to get his board to attend these meetings and let them see what we are doing in the State for the benefit of the people; therefore I make this motion, and hope it will be carried.

A Member—I second the motion.

The Chair—The question before the house is, that the State Board of Health are requested to hold an annual meeting of the State board and local boards of health.

The question then coming up on the motion, it was carried.

On motion of Prof. Nelson, the meeting adjourned.

APPENDIX II.

Proceedings of a Meeting

OF THE

State Board of Health

AND

Local Boards of Health of Ohio,

HELD IN

COLUMBUS, OHIO,

JANUARY 26th and 27th, 1893.

PROCEEDINGS OF A MEETING OF THE STATE AND LOCAL BOARDS OF HEALTH

HELD IN

COLUMBUS, OHIO, JANUARY 26th AND 27th, 1893.

The Convention was called to order by the President, S. A. Conklin, M. D., who read his opening address to the Convention:

INTRODUCTORY ADDRESS

By S. A. Conklin, M. D., President of State Board of Health, Canton.

Gentlemen: This conjoint meeting of our State and local boards of health was determined upon some months ago in view of the fact of the increasing probability of Asiatic cholera visiting us the coming season. It has been undertaken to secure a united work on the part of the government, and our commonwealth, in good time and season.

To this end we have addressed circular letters to all the local boards of health, as well as to many municipal authorities and others, and it seems to me that we ought to have a very profitable and interesting meeting.

We had sufficient warning last summer and autumn of the coming danger to be fully prepared and properly protected from its ravages, but the very recent outbreak of cholera in Hamburg and other small cities near by should startle this country, as it has all Europe, to the realization that the dreaded scourge is by no means entirely destroyed.

The medical profession, all along, has been constantly warning the authorities that every precaution should be taken against probable invasion of this country by the plague during the next year, but this late breaking out in midwinter proves to a certainty that the smothering fires of the pest are ready and willing to burst out again with increased force upon the approach of spring and summer.

Our State Board will rely greatly upon the assistance and co-operation of our National and Local Boards, and municipal powers over all the State.

The State Board urgently requests that you use all honorable influence with municipal and other authorities to secure the passage of, and the enforcement of any law, that will in any way tend to lessen the probability of the appearance of cholera, alleviate the suffering of the sick and care properly for the dead in this dreaded scourge.

A very pertinent question for me to ask now: Are our authorities, at this late day, sufficiently alive to the gravity of the situation? Are we to meet the enemy in the same careless and unprepared manner which marked our situation last summer? And are we to be treated with the same seeming disgraceful spectacle of wrangling between National and State authorities, as was presented to us in the situation last year, interfering with, and impairing the efficiency of every part of the work attempted?

I hope the lessons of last year will tend to give us some laws, or system of laws, that will enable us to keep the enemy from our shores.

I trow it will have a favorable bearing upon our Congress, and result in giving us an excellent National quarantine law, comprehensive enough in power and scope, to allow us to handle the subject in a way creditable to both civilization and humanity.

I am of the opinion that the law of self-preservation is paramount to all literal law, and that every organized government has a perfect right to protect itself against the introduction of any infectious or contagious disease, and fully justified in putting any country, place or thing under such quarantine rules, as would prevent the introduction of any questionable disease. But the measures of quarantine have been so diverse and so inconsistent with our knowledge of preventable disease, that it may be questioned whether its present administration would prevent the introduction of cholera.

It is now time, it seems to me, for all to urge upon Congress to take some definite action that will tend to obstruct commerce as little as possible, and yet absolutely prevent the introduction of the disease.

A system of international notification, it seems to me, is very necessary; a system of Consular notification would meet many difficult points.

We should, by all means, have a national sanitary committee appointed to regulate all national work in regard to quarantine matters throughout the country, and this national sanitary authority should be able to reach all local sanitary authorities, and extend to them absolute compulsory powers that all vessels arriving from any infected port be detained for medical inspection, and not released until the medical health officer shall give clean certificates of health to all persons on board; false answers should be made a penal offense.

All railroad traffic, both passenger and freight, should be controlled by the same sanitary authority and handed down to the state and muncipal boards throughout the country. My opinion is that all quarantine should be removed from the customs authority to sanitary authority.

The national government's board should be in direct communication with all medical officers of health, with all the state and local boards of health.

It should be the duty of the various boards to have all needed arrangements made for the accommodation of all cholera patients, and have all needed disinfectants, remedies, and other articles well arranged for, and have certain arrangements made for a quick and proper disposal of the dead.

In conclusion, gentlemen, I will call your attention to the recent outbreak of typhus fever in New York; it very well illustrates what can occur if the same looseness is followed in quarantining against cholera the coming summer.

I presume no one denies that this malignant type of disease originated from, and was directly traceable to the filth and disease germs brought in from foreign lands. Ship loads of rags known to be collected from the infected districts of Europe; vessels crowded with immigrants were allowed to enter without disinfection, or any reference whatever to the sanitary condition of either the rags or the human freight.

I cannot imagine a more favorable vehicle to introduce a disease into a country than a foul ship reaking with filth.

I do hope, gentlemen, that at an early day we will be able to secure from Congress, a power to create a National Board of Health, with the co-operation of an international sanitary service; then only could we expect to prevent the transmission of epidemic disease by commerce.

To quote Dr. Joseph Holt, of New Orleans, La.:

"So far as the American people are concerned, and it is they who are altogether concerned—for they have been, and may yet be compelled to suffer. and also pay for the damages to themselves; both Congress and maritime States, in quarantine failure and pestilence invasion, are alike chargeable with contributary negligence in the true legal application of that term; not only has the public health not been protected, but commerce has been unfairly taxed and mightily abused.

"The demand of the American peop.e is for protection of life and the general welfare against pestilence invasion. Before this demand all sentiments of local pride and motives of personal advantage must wither away.

"Perfect protection can and must be secured in a common defense."

Mr. Von Stein, of Upper Sandusky—Mr. President, if I am in order, I will offer a motion that we limit discussion to three minutes, with no repetition except by consent of the Convention.

The motion being seconded was unanimously adopted.

The Chair—The first paper on the programme is a paper by Dr. S. P. Wise, member of the State Board of Health from Millersburg, Ohio:

PRACTICAL CONCLUSIONS ON CHOLERA.

By S. P. WISE, M. D., Member of the State Board of Health, Millersburg, O.

There is no malady in the whole category of human diseases which has been subjected to more thorough scientific investigation than Asiatic cholera. The bibliography of this disease comprises thousands of dissertations, including many large volumes, written in nearly all the languages of the civilized nations of the world We would naturally suppose that such a vast accumulation of knowledge and experience, collated by the most learned observers of the last century, would lead us to a complete understanding of the causes relating to its epidemic prevalence, and that we would be in possession of such knowledge as would enable us to largely mitigate its devastations if not entirely arrest its spread. It is true that a great many scientific facts have been evolved which, in their practical application have accomplished a great deal toward a result, by rendering epidemics less intractable, and depriving the disease of many of its terrors. This has been notably demonstrated in the European epidemic of last year. We are compelled to admit, however, that heretofore, in many instances, human effort under the guidance of scientific knowledge has furnished but a feeble obstacle to this dreadful scourge, and the disease has often over-ridden other barricades. I do not wish to appear in the role of a pessimist, especially when the time may be approaching which calls for the concentration of all the resources which science, forethought and energy can enlist. It is, however, quite evident that the tendency of the present time is to place too much confidence in the protection afforded by the quarantine measures that may be enforced by the national, state or local sanitary authorities; while home sanitation, and personal prophylaxis are regarded of minor importance or even of no consequence whatever. If cholera should invade our country this year and become epidemic, the concensus of public opinion doubtless will be, that the health authorities are responsible for the calamity, and are guilty of gross neglect or woeful ignorance, and reproach and condemnation will be heaped upon them without end. It is, therefore. that I take the liberty on this occasion of referring briefly to the shadowy side of the cholera question, with the hope that what may be feebly expressed may serve as food for reflection and lead to rational conclusions in regard to that which is inevitable. The revelations of the microscope, together with the assiduous labors of scientists, have advanced epidemiology considerably in the last quarter of a century, but it is yet in its infancy and far from being a science. "The wind bloweth where it listeth, and thou hearest the sound thereof, but cannot tell whence it cometh and whither it goeth." This biblical declaration applies in a certain degree to the advance and disappearance of a cholera epidemic as well as to the spread of all other epidemic diseases. A thoughtful consideration of the history of cholera epidemics, and a careful inquiry into the circumstances relating to the diffusion of the disease brings forth most stubborn facts which cannot be explained on the grounds of human portability. The causes of some of its manifestations remain shrouded in mystery, and it becomes evident that there must be some occult influences which are important factors in its development and spread. Whether these influences are electric, cosmic or telluric, we are unable to determine, but it is clear that the favorable conditions for their operation are developed by the aggregation of human beings, and the accumulation of filth, together with certain fermentative processes produced by foul air, sewage, heat and moisture. The theories of the contagionists, non-contagionists and localists are all supported by some facts which cannot be controverted. The wave theory of Fayrer, the ground-water theory of Pettenkoffer, and the philosophic doubts of Klein and Cunningham, cannot be entirely ignored, and are entitled to as much respectful consideration as the opinions of Koch and his followers. It must also be noticed that these theories are by no means mutually exclusive, and it may well turn out that all of them contain a germ of truth. They all agree that India is the home of cholera and that it is from thence periodically communicated to other nations. The annual pilgrimages to the sacred (?) shrine of Mecca and the festivals that take place at Juggernaut are universally regarded as being the prime factors in its original development and the starting points from which all epidemics emanate. When the fact is known, however, that these favoring conditions have existed annually for many centuries past, the question arises why the disease is not transmitted to the rest of the civilized world every year? Hundreds of thousands succumb to its ravages annually within the borders of India and at Mecca. The avenues of travel to Europe and from thence to the western hemisphere are constantly open, and since the modes of rapid transit of modern times are in vogue, has increased more than a hundred fold and the opportunities for transmission of contagion have thereby been equally enhanced. The quarantine regulations have been uniformly observed every season, and yet, why is it, that cholera has prevailed as an epidemic in the United States only in 1832, 1834, 1848, 1852, 1865, 1867 and 1873?

There is another fact which has never been explained by the believers in specific contagion, that is fully sustained by the history of all the epidemics which have occurred in the past. It has been observed that prior to the invasion of true epidemic cholera, diarrhœal diseases are far more common than usual, though they may not be attended by any special fatality. This "incubative epidemic period" often dates back several months, and even to the season before the appearance of true cholera. The health reports of large citiess how this tendency to a marked degree, by the increased prevalence, and larger number of deaths from cholera infantum and cholera morbus. If we attempt to reconcile this fact with the germ theory of cholera we are obliged to assume that the germ has preceded the epidemic, and has already gained a foothold, and that the disease has not attained its full virulence until the microbe, by a process of successive reproduction, has developed into a full-fledged cholera germ. So that the diseases euphemistically called cholerine, cholera nostra, etc., are in reality the product of the cholera vibro in its embryonic state.

Why an epidemic of cholera should cease in a certain length of time, and the disease entirely disappear from a country, is another query which is difficult of solution. It has been likened unto the ravages of the silkworm, which feasts on those portions of the mulberry leaf which are adapted to its purpose, until they are consumed, and then goes to another. So with cholera, it attacks all those who are susceptible to it, and after the number of its victims in a locality are exhausted, then it proceeds to another. That bad sanitary conditions are responsible for its perpetuation and virulence in certain places, there is no doubt, but were its continuance solely dependent on these factors, these localities would remain permanently infected, especially in warm climates, and outbreaks of the disease would occur year after year. It is unnecessary to cite all the facts as to the invasion and disappearance of cholera which cannot be explained by any hypothesis that has so far been promulgated. The evidences presented are sufficient to justify us in the belief of the existence of some mysterious influences, over which we have no control, which periodically favor the propagation and distribution of the germ, and thereby renders the occurrence of an epidemic possible.

In presenting these considerations I do not wish to be understood that I detract one iota from the strict discipline of quarantine and all the measures that are employed in the contravention of the disease. To the contrary, I would insist upon the most diligent and unremitting enforcement of the whole series of precautionary measures, restrictive as well as hygienic, that are demanded by modern sanitary science. These are the only weapons at our command, and we would be culpable did we not avail ourselves of their use. For practical purposes it is sufficient for the sanitarian to bear in mind that cholera is communicated by human agency. That it is carried along the lines of travel from one country to another by mankind, and especially by their clothing and personal effects; and that it is a filth disease "carried by dirty people to dirty places." If we formulate and carry out our precautions strictly in accordance with these propositions we will accomplish a great deal toward staying the progress of the scourge, and we will be conscious of the fact that we have done all that lies in human power.

Quarantine has been defined by English sanitarians as being an "elaborate system of leakiness," also that it is "useless and dangerous." They say "medical inspection with power of detention" is a better precaution, but at best is only a coarse sieve which will strain off the majority of coarser cases, but through its many appertures the more subtle cases will pass. Now this statement strikes me as partaking somewhat of the nature of a *British bull*, and as being a pretty fair admission of the efficiency of quarantine. "Medical inspection with power of detention" is certainly very little short of what is implied by the word quarantine in the general acceptation of the term. Moreover, if it strains out the majority of coarser cases it cannot be denounced as wholly useless, and all that would be remaining to satisfy our most sanguine expectations would be to interpose another sieve with finer meshes that will obstruct the obscure cases. This is done by the detention of suspects for a length of time corresponding with the incubative period of the disease. England's chief line of defense in the prevention of cholera is good local sanitation. Her sanitarians claim that "if you have cholera it will be because yourself or those about you have made you liable to it by neglect." They have spent millions of dollars on sanitary improvements, and they undoubtedly have the best organized and most efficient sanitary service in the world. The great reduction of their death-rate from zymotic diseases proves conclusively that the money they have expended has been the greatest financial investment that they or any other nation can make. England has been practically free from cholera for the last thirty years, and her people naturally attribute their immunity to their internal sanitary administration. If we take into consideration that during last summer her eastern ports were exposed to the full force of danger of infection from their close proximity to Hamburg, and yet only nineteen cases were brought into the country from the continent, without a single instance of a local spread of the disease, it certainly is remarkable, and we can justly compliment them on the success of their system of protection.

After having made due obeisance to British home sanitation, I can not refrain from briefly alluding to the enormous outrage upon humanity in general they are tolerating in their foreign domain in India. As India is a part of the home government, it is a glaring inconsistency that the same sanitary measures are not efornced in that country that have proven so effectual at home. There can be no shadow of a doubt that cholera is a preventable disease in its origin, especially when we contemplate the abominable conditions which manifestly give rise to it in its native home. There is no reason why the endemic area in India cannot be made as clean and salubrious as any part of the British Islands by the enforcement of sanitary decency and the provision of a pure water supply. The English Government stands indicted before the tribunal of the entire scientific world for maintaining a nuisance, and it is a question whether her administration will much longer escape the interference of other nations if steps are not taken towards its abatement.

When I was a small boy, I used to attend the missionary services, regularly held at our church. I remember how vociferously I joined in singing,

"From Greenland's icy mountains,
From India's coral strand," etc.,

and with what great pleasure I dropped my dime into the contribution box, the contents of which was to be devoted to the spreading of the Gospel in heathen lands. Little did I then think that in after years I would be in danger of being recompensed with a portion of cholera microbes which might precipitate me into that country "from whence no traveler returns."

Since my paper is supposed to be of a practical character, you will pardon me for recommending a somewhat radical remedy for the Indian nuisance. I would suggest that those swarthy fellows over there be ordered to stop their festivals and pilgrimages, and quit drinking the water they bathe in, and if they did not obey the edict, let it be understood that we will raise a disturbance in their congregation in the midst of their most solemn incantations. The munitions of war in the hands of a good military, would let more daylight into the minds of the benighted heathen, and powder and ball would do more toward alluring them into the folds of righteousness in a brief space of time than all the sad-eyed missionaries in christendom can accomplish in a hundred centuries.

When cholera makes its first appearance in a country, it is of extreme importance that the true character of the first case should be early recognized. The close resemblance of the disease to cholera morbus, or so-called cholerine, renders a mistake extremely liable, leading to unnecessary alarm on the one hand, and to most disastrous results on the other.

It is now generally conceded that the presence of the cholera-vibrio in the discharges of the patient is certain proof that the case is one of genuine Asiatic cholera, although it is admitted by the most ardent advocates of the germ theory that in a limited number of cases the organism is absent. It has also been demonstrated by different observers that it does not appear later than the stage of collapse, at which time the stools are no longer typical in those cases in which there is very little reaction. Notwithstanding this fact, great confidence is placed in biological evidence as a means of diagnosis, and in Germany the State has made provisions that a sufficient number of persons, skilled in these special methods, shall be at hand. The latest scientific researches have shown that the vibro which Koch has identified as being the cause of cholera, is the only germ so far discovered that will produce a similar disease in the lower animals.

At the time Koch made his observations in 1883, he isolated and cultivated the germ, and proved that it was nearly always present in the dejections of cholera patients, but he was unable to reproduce the disease by the inoculation of animals. The lack of more satisfactory evidence as to its pathogenic properties led a great many medical men to regard the discovery with considerable scepticism. The severe criticism of his opponents, and their active endeavors to disprove his theory, stimulated research and brought out facts which corroborated his conclusions and led to even more denfiite results than he himself had attained. Gamaleia and Haftkine increased the virulence of the microbe by passing it through a serious of guinea pigs, and with this intensified virus they produced a disorder in dogs and rabbits which was stated to have been absolutely identical with human cholera. These experiments are supported by analogy in the discovery of the vibrio-metschinokovi, which also has an important bearing on the human cholera question. This microbe is so closely allied to the cholera vibrio that it can scarcely be distinguished therefrom, and is associated with the choleriform disease in fowls. We have the clearest proof that it is the cause of cholera in fowls, hence analogy would suggest that Koch's vibrio causes the cholera in human beings. While recent biological research has cast additional light upon many obscure questions relating to disease-producing organisms, yet it has also unsettled some of the doctrines which have hitherto been accepted by bacteriologists in general. This is notably the case in regard to the specificity of germs. For instance, the typhoid germ is no longer regarded as a specific organism, but is supposed to be the bacillus coli which is transformed into the typhoid bacillus of Eberth by its passage through the human organism in those persons who are susceptible to typhoid fever. A similar conclusion may also await the cholera vibro, as it has already been shown that it can be made to exist in the absence of oxygen, and thus when it is placed under such conditions as exist in the human intestine, it secretes poisonous substances of the highest degree of activity.

Cunningham, of India, who has extensive opportunities of making observations on cholera patients, asserts that there are at least ten or a dozen different varieties of cholera microbes; and that no evidence can be produced that either of these species is the primary cause of cholera. He and several other observers claim that they have found Koch's vibrio in the drinking waters of India at a time when the people using such waters were absolutely free from cholera. The foregoing declarations by eminent scientists, coupled with the fact that all pathogenic organisms are subject to great variations, under different circumstances and environments, warrant the conclusion that the bacteriological method of diagnosis in cholera may be by no means infallible. Moreover, in case of an epidemic in this country, a sufficient number of persons who are skilled in microscopic diagnosis could not be supplied to meet the demands, especially if numerous outbreaks should occur in smaller towns or remote villages. It, therefore, behooves the medical practitioners to make a careful study of the history of former epidemics, and acquaint themselves thoroughly with all the clinical features of the disease, in order that they may be able to recognize its earliest symptoms. It occurs to me, at any rate, that a complete knowledge of the disease, together with close observation and good judgment, is worth more in an emergency than Koch's whole laboratory outfit, especially in the hands of an inexperienced mycologist. The fact that a cholera patient may die in a few hours, and that it requires from 24 to 36 hours and elaborate technical manipulation to establish a diagnosis by the latter method, brings to mind an incident which occurred in a Western village. The inhabitants of said village by reason of frequent attendance at a literary lyceum, had become so extremely parliamentary in all of their transactions, that when one of their citizens fell from a bridge into the river, they called a meeting, passed a resolution and appointed a committee to rescue the drowning person.

The fact that cholera is transmitted from person to person by infected clothing is abundantly proven by innumerable instances in the history of past epidemics. There are equally as many authenticated examples in which the disease was contracted by persons who lived near infected cesspools, or entered privies whose vaults were in a bad sanitary condition, and into whose contents choleraic discharges had been received. If we take an unprejudiced view of these cases, and calmly consider all the circumstances connected with the transmission, we are compelled to admit the possibility of *ærial infection at a short distance.* It is said that we eat and drink cholera but that the contagion does not reach the system through the atmosphere. It is quite difficult, however, for us to become reconciled to this theory if we give due weight to the circumstantial evidence as narrated by scientific as well as by uneducated observers. For instance, in 1848 a ship left a European port. On the sixteenth day out cholera broke out among the passengers. The captain tells us that the day preceding was very cold and there was a general overhauling of baggage for warmer clothing. Subsequent investigation disclosed the fact that one of the passengers had clothing in his possession which had belonged to an individual who had died of cholera in Germany. Or another illustration: Mr. West, of Sandusky, an estimable old cholera veteran of 1849, told me that persons who had stood on the dock and witnessed the landing of the immigrants who brought the contagion to that city in that year, were stricken down with the disease in a few hours thereafter. Now it would seem highly improbable that the victims in such instances as above detailed could have eaten or drunk the microbe, and there is no evidence that they even touched the infected material and thereby communicated the germ to their mouths, and it thus gained entrance to the alimentary canal in accordance with the modern stereotyped mode of infection. No evidence can be produced that the cholera poison resides in the air or that it is carried by the wind or air currents to any considerable distance, but we certainly must conclude that the contagion is not exclusively communicated in food and drink, but that the disease can be, and often is contracted, from infected clothing at short range without any other communicating medium than the atmosphere. It is generally conceded that drying kills the cholera germ, and when Dr. Braerard of Paris, and Dr. Klein, then at Calcutta, swallowed a large quantity of the microbes in their drink, the reason assigned for their miraculous escape was that the germs they swallowed had become harmless by dessication. If, therefore, we assume that the germs as contained in clothing in a dry state, do float in the air and enter the mouth or respiratory organs, we are still left without a plausible explanation for ærial infection. There is no doubt, however, that future investigation will prove that the *vibrio cholera Asiatica* is a spore-producing microbe, which spores constitute the medium of infection through the atmosphere. Such a theory would be in accordance with our present knowledge of sporulating germs, and perfectly consistent with the history of those cases of obscure infection.

We know that there is no danger of contracting the disease from recent choleraic discharges, except the germ is by some means communicated to the alimentary canal of the person infected. But let those discharges be received upon clothing and the germs remain undisturbed by disinfecting agents until they have become dried, it is quite reasonable to suppose that they may *run to seed* under such favorable conditions; and when the clothing is disturbed the *seeds* are readily set free into the surrounding atmosphere. Bacteriologists tell us that it requires from thirty-six to forty-eight hours for the anthrax bacillus to complete the formation of spores; so that if it is found that the cholera germ is of the sporulating variety, the length of time necessary for soiled clothing to dry would exactly correspond with the time required for the formation of its reproductive spores. The extreme tenacity of life possessed by microbic spores, suggest the importance of destroying the germ before such reproductive processes can take place.

In those instances in which the disease is distributed from infected cesspools or privy vaults it is the popular opinion that the contagious principle is contained in the gaseous emanations therefrom. This is a very natural conclusion, but unfortunately it is not supported by the scientific facts relating to the natural history of the cholera microbe. It is said to be a very frail germ, and will succumb speedily to the ravages of the ordinary bacteria of decomposition and putrefaction. If this bacterial law is universal in its operation, than all foul places that become infected by the specific contagion of cholera can remain dangerous but a very short period of time. That this is not true is abundantly proven by numerous examples in the history of epidemics. To the contrary, we know that accumulations of filth do harbor and propagate the contagion of cholera, as well as that of all other filth diseases; and that those are the places where the disease gains its foothold and lingers throughout a whole season, and often mark its reappearance the following year, especially in warm climates.

For practical purposes this knowledge is all sufficient to guide us in our measures of prevention without entering into any scientific discussion, as to the *modus operandi* of infection. At any rate, it seems to be merely a question of Koch vs. Pettenkoffer, in which the latter scores a victory by an overwhelming majority of undeniable facts in support of his theory of local infection, Physicians are aware that the effluvia from foul sources will produce simple diarrhœa. Why not cause cholera if they are impregnated with its specific contagion?

The Chair—Gentlemen, Dr. Wise's paper is now open for discussion.

Prof. Nelson—It seems to me particularly desirable that we have a registry of the attendance at this meeting, and I suggest that the Secretary prepare slips of paper and pass them around the room and ask every one to sign his name and residence, and his particular relation to the health board, whether or not he is a member of a local board, or in what way he is connected with the subject.

Dr. Probst—I would say that I have prepared such blanks, and also that we have a stenographer with us. We will publish the proceedings in full, and if you will please give us your names each one present will receive a copy of the proceedings when they are published.

The Chair—I will suggest, gentlemen, that each speaker confine himself as nearly as possible to the discussion of the subject matter.

Dr. Probst—Mr. President, there is one point in Dr. Wise's paper that I would like to speak of; that is, I hope the impression will not go out from this meeting that cholera germs are usually flying around with wings through the air. I think the Doctor can probably substantiate that cholera may be carried through the air at very short range, and doubtless that is all he wishes to bring out in his paper; but there should not be too much stress laid upon the point, that we are in danger of an epidemic of cholera from its being carried through the atmosphere. It is usually held that the typhoid germ and cholera germ are very much alike in the manner of reproduction, both being contained in the bowel excreta. Now, we are familiar with the fact that typhoid fever may break out in a house which is connected with a sewer in which there is a faulty trap, or possibly no trap, and in that case it has been held that infection is by the atmosphere. We can conceive of the possibility of typhoid stools being thrown into a sewer and partly drying upon the sides of the sewer, and the typhoid germs being carried back into the room by currents of air, or so-called sewer gas. I think that might possibly be true of cholera. There is certainly one instance which I think well authenticated which seems to prove this. A privy vault became infected with cholera in a little village in Kentucky, and a number of cases were traced to persons who had used this privy vault after it was known to have been used by a cholera patient. It is highly probable that in this case the infection was through the atmosphere. I speak of this for fear Dr. Wise may have placed too much stress upon ærial infection.

The Chair—Dr. Buechner, let us have your opinion.

Dr. Buechner—I don't believe everything contained in that paper. I cannot speak very much, maybe not at all from experience. But I can only reiterate a conversation which I had with Dr. Koch in 1886. He claims, as you all know, that it is absolutely necessary that the bacteria must enter by the mouth or by the rectum, one way or another, but that they are introduced in some way into the digestive organs. He thinks it is impossible that cholera can be transmitted by the bacilli entering through the respiration, He told me in 1882, when the imperial government sent him with a commission of eighteen physicians to India, that none of them were attacked with cholera when thousands died around them. He said he took the precaution that he never drank or ate anything that was not boiled or boiling hot. He never allowed any victuals he would eat to cool down, but swallowed them as hot as he could. A few years ago when the cholera was so bad in Italy, he was there with a number of physicians, with perfect impunity, by following the same course, and I know he has spent a good deal of time in Hamburg, from letters I have received. He is very positive and so is Prof. Fraenkle that there is no such thing as infection at all through the air.

A Member—I would like to say this, that those physicians who are talking upon this subject of cholera should also mention what would be the best or proper way of disposing of these stools. If it is a fact that cholera can be transmitted from a privy vault, what is the best means of disposing of stools from cholera patients.

Prof. Redding, of Findlay—I should like to ask the Secretary and also the last gentleman but one, if it is proof positive that a man under the best possible conditions of health, robust and strong, who uses all precautions in drinking water and in his food, and exposed to cholera—if that alone is sufficient to prove to us that the cholera germ cannot be carried through the air? It seems to me, although I have not had any experience in the matter, that the condition of a man's body has a great deal to do with his contracting cholera, as well as anything else, and it can be carried through the air and through water and through food, and that cholera and other diseases of similar character have been carried from one place to another by the atmosphere as well as by drinking water.

Dr. Buechner—Well, what is the real question? State it in as few words as possible.

Prof. Redding—Because a man is in good, strong health, and takes every precaution with reference to what he eats and drinks, is that proof positive that cholera germs cannot be carried through the air?

Dr. Buechner—No; probably not positive proof, because I think every doctor will admit that the system must be in such a condition that the germ will produce that disease. You may be exposed to almost any contagious disease that we suppose is caused by a germ, and if there is not a certain condition of your system to augment these microbes in your system, they are perfectly harmless; but if they augment in sufficient number it will cause that disease., I cannot speak from personal experience in this matter. I have seen cases of cholera in the old country. I cannot speak from personal experience whether it is carried through the air or not, but I have such confidence in men like Koch that I can very readily take their opinion.

Dr. Spencer—I should like to ask Dr. Wise if he does not consider the statement he made in reference to the epidemic at Sandusky in 1849—if he does not consider that that was an atmospheric contagion at that time. He stated, I believe, that the epidemic originated from citizens standing by when a cargo of immigrants was unloaded at Sandusky, and that the contagion began the next day in the people who were standing by. I would ask if he does not consider that that was atmospheric in its origin.

Dr. Wise—That is exactly the point I want to make. I wanted to bring before the Convention for consideration the possibility of infection through the air at short distances. I emphasized that, and that any person could conceive that those persons standing on the top and merely witnessing the landing of those immigrants, or the unloading of their baggage, could have taken the germ into their alimentary canal does not seem very possible to me; and in the instance that was referred to of contagion from a privy vault, there were some sixty persons who contracted cholera from the privy vault. Now, I do not insist that that is the usual method of infection. I have as much confidence in Koch's theory as anybody, and I think the way in which it is communicated is through the alimentary canal, but I think it is possible for it to be communicated at a short distance through the air; and if we don't clean up our foul places we will certainly find out.

Dr. Hoover—I agree with Dr. Buechner, that the introduction into the system is through the alimentary canal, and I see how it is possible, through an ærial infection, that these germs could be introduced into the alimentary canal. I presume that there is not a single one of us who does not breathe part of the time through the mouth, and if the air should contain germs, it is highly probable that those germs would be introduced into the mouth, and mingling with the saliva, would be swallowed, as it is our habit to swallow the secretions in the mouth, and the germs would thus be introduced into the canal. It is no argument to say that in the case of chicken cholera, the germ is introduced into the air passages, and at the same time admit that the germ of chicken cholera is different from the Asiatic cholera germ. Because chickens breathe cholera we need not necessarily breathe cholera. I have heard these various theories propounded, and in a recent discussion in our local academy of medicine, I was interested and much amused by the statement of an aged and respectable physician calling to mind the occurrence of cholera a great many years ago, when at that time there were peculiar atmospheric manifestations, and that the dogs bayed in a peculiar manner. Now, whether the dogs had at that time discovered the cholera bacillus, and had taken alarm at its appearance and antidated Koch, I am not prepared to say, but it does seem ridiculous that such views as to the causation of cholera should be considered in this age of enlightenment. It does not necessarily follow that every one should be infected with an infectious disease, and I think it is probable that quite a large proportion of healthy persons ingest cholera germs during the prevalence of an epidemic and escape the disease. If we keep the system in an excellent condition, especially the alimentary part of it, if we keep our digestion good, and keep the secretions of the alimentary canal in a normal condition, and keep the canal well filled with food, that decreases the chances for infection. We cannot prove this fact, because we do not have post-mortems of living subjects, and we cannot examine into these conditions; the bacteriological examination of stools is not carried on in connection with living subjects, it is only the stools from infected or suspected persons. The manifestations of the symptoms of cholera in an individual, and the absence of the germ in the stools, does not prove that he has had cholera, or been slightly infected. It does not prove that it is cholera in a modified form, because we are all well aware that during the season of the year when cholera prevails there are other digestive disorders that simulate cholera, or have symptoms in common with it.

Dr. Stanley, of Sandusky—I desire to say a few words upon this subject. I went to Sandusky after I had graduated in 1849, during the prevalence of Asiatic cholera. They died at the rate of from thirty to fifty per day, and there were probably not more than six or seven hundred people then residing in the town. The others had fled. Now, what I am going to say is from experience. I have but little faith in what we know scientifically about Asiatic cholera, and still I would not say a word to discourage the advancement of science upon that subject. But I was going to say, in a few words, that some five hundred died with Asiatic cholera in Sandusky in 1849. As sextons were not to be found, or individuals either, who were willing to participate in the burial of cholera subjects, they were taken to the burying ground and dumped out upon the surface of the earth, in hot weather, until sometimes there would be one hundred lying there unburied. I helped to dig a trench, and then assisted in filling it with thirty-six subjects that had died with cholera. I did not get it. I was busy day and night, and never took my clothes from my person to sleep or to go to bed for two months, and yet I escaped the cholera.

On this subject of aerial transmission of cholera, it does seem to me that I have a little confidence in it. When it was the most fatal and prevalent in Sandusky, I recollect well that I was called into the country, maybe five miles, more than once to visit cholera patients who had not been away from their homes during the time of the prevalence of cholera in Sandusky. They had not come in communication with any individual that had cholera. Neither had they received any garment or any clothing of any description that would produce cholera.

In a case which occurred in Venice, three miles from Sandusky, I was sent for on the first day of June to visit the patient, a young man whom they said was very sick. I was not at home at the time, but pretty soon I made my visit to Venice. Now, this young man had a brother that was boating on the Mississippi river and he died there with Asiatic cholera. They packed his clothes in a trunk and sent them to Venice to this brother that I am alluding to. He obtained the clothes in the evening, and he took them out and hung them out doors to air. The next morning, early in the morning, he was attacked with Asiatic cholera, and before one o'clock that day he died. When I got there he was in a collapsed condition, and I did not pretend to do anything because they are virtually dead then when they are in the collapsed condition.

Dr. Ewing, of Findlay—I should like to ask the gentleman who spoke, what the relation of the currents of air was in those cases that were five miles away from the city?

Dr. Stanley—I cannot now say that I recollect, and I probably paid no attention to it at the time.

Dr. Houston, of Urbana—I thought Dr. Wise's paper a very good one, and I quite agree with almost all that he said. There was one statement he made there that we know to be a fact, and that might be of a good deal of importance or it might not, and that is the fact that epidemics of cholera are preceded by diarrheal disorders of more than usual violence. Now, the question would be, what does that mean, when a person is so affected in advance? I think it was suggested in the paper that these attacks were due to the cholera contagion which was not yet virulent, or had not yet assumed much virulence. Now, the question is, with those persons who are attacked, does the attack protect them from cholera, or does it mean that those persons are peculiarly susceptible and should be warned by their physicians to be more than usually careful if cholera does appear.

Dr. Billings, of Medina—I have come 128 or 130 miles, as have a good many others, and we have come here as representatives from our boards to learn how to prevent cholera, more than to learn the cause of it; and I feel, as a representative, that I would like to learn all I can, instead of having our meeting run into what might be termed a medical experience meeting. I would like to learn the facts for which we were called here.

Dr. Cunningham, of Mt. Vernon—The gentleman who last spoke gives the proper sound, I think, to this matter. The topic, so far as it has been discussed, is the scientific part of it, but I understand, according to the old adage, that an ounce of prevention is better than a pound of cure, and I presume the boards of health of the state are here for the purpose of making inquiry how to prevent cholera. Dr. Wise, in his paper, suggested, and I think truly, too, that cholera lives upon filth; and if that be so, then it seems to me that the duty of boards of health is to clean up the cities, and to get rid of all the filth we can, so that when it does come into the United States, it will have nothing to live on.

The Chair—Gentlemen, we will have to cut this part of the discussion short, and proceed to the next paper, by Dr. McLean, of Elyria, on the subject of "The Disposal of the Cholera Dead."

Dr. McLean—Mr. President, and Gentlemen: There are a few things that I dislike very much to do, and one of them is to make an apology. Another is to assist, or in any way to be responsible, for bringing into the world anything that may be a monstrosity, or anything that is defective—not so much for the violence that it will do to my own feelings as to those of the waiting attendants. And when I say to you that almost ever since I signified to our worthy Secretary that I would respond to his call in this paper, I have been laboring with physical infirmities myself to that extent that I was almost totally unfit for either mental or physical labor; and it was only within a few days that I could attempt it at all. But, rather than show the white feather, I am about to inflict upon you this dispensation of providence, and as I have said to others under like circumstances, please to bear it with all the Christian resignation possible.

THE DISPOSAL OF THE CHOLERA DEAD.

By W. F. McLEAN, M. D., Health Officer, Elyria, Ohio.

A study of the world's history reveals the fact that the disposal of the dead has occupied a prominent position in the religious cult or social ethics of all enlightened, civilized or savage nations, from the Stone Age or first period of recorded time to this enlightened nineteenth century. In fact, you can almost trace the progress of the world's development from savagery to enlightenment by *consulting their burial customs*, as revealed by cave, mound, pyramid or tomb to the costly and ornate mausoleum of modern times. The poetic idea of "The Storied Urn," to which we may add poetic license or latitude, presupposes volumes of unwritten history. And the archæologist and theologian can trace through all these customs an intuition or belief that this life is not the end of individual existence; that somehow and somewhere these individual entities will live on in the hereafter to "roam through the happy hunting grounds," according to the belief of the savage; or according to the faith of the Christian "walk the streets of the New Jerusalem." Hence the reverence and awe of the death scene, and care of the body after death, leaving out of the account the pang of severed ties of friendship, love and companionship, and mankind will sacrifice every interest and risk life and health to cater to this sentiment; even we ultra utilitarians, from a sanitary point of view, however materialistic we may be, must admit that we have inherited or imbibed this sentiment; and as reasonable, charitable beings we must concede like feelings to our fellows, leaving the question, whether it be intution, inspiration or revelation, to the theologian or to individual opinion.

But say you, how is all this germane to the subject under discussion, viz.:

"The Disposal of the Cholera Dead?" We shall see presently. I make first this general proposition, viz.: To secure an efficient enforcement of any sanitary measure, it must be accomplished with as little violence to public sentiment and private prejudice as possible. Any other course would result in social disturbance, concealment and evasion, and consequent inefficiency. But if we, governed by the golden rule, first kindly instruct the uninformed in then ecessity of the proposed measures for their own and the public safety, being careful to put personal interests first—then see to it that its enforcement is accomplished as kindly and inoffensively as possible—we will secure efficient service. Man, like his porcine inferior, is easier led than driven: "Whom the Gods would destroy they first made mad." We all, no doubt, will agree that cremation is the ideal method of disposing of the dead—considered from a sanitary point of view—especially, if the death is the result of contagion or infection. But in a general epidemic of cholera cremation would be impracticable for several reasons. First, on account of the expense of building and maintaining crematory furnaces, which would be extremely burdensome, except to large cities and corporations. Second, the inability to thus dispose of the dead during a severe epidemic. Third, conflict of sentiment, especially from a large body of christendom, who furnish the largest proportion of cholera victims; and who teach and believe in a literal resurrection of the body, and the ceremonious deposit of that body in "consecrated ground" preparatory to said resurrection. Besides, even to those who favor ascending heavenward, Elijah-like, in a chariot of fire," while the mourning friends remain in a convenient waiting-room until they receive in a beautiful cinerary urn the ashes of their loved and lost; the idea of being indiscriminately dumped into a crematory furnace with others "of all sorts and conditions," would be extremely repulsive. So also would be the indiscriminate carting of our dead, like the carcases of dumb brutes, by unfeeling, boorish employes to the cemetery or burying-ground. So that we come back to the original question, "the *proper* disposal of the cholera dead," which it seems to me resolves itself into one of expediency, *i. e.*, first, without violation of sentiment; second, cheapness; third, utility or effectiveness. And I suppose in view of the possible visit of cholera to our shores in the near future, the object of this discussion is to obtain practicable hints as to the proper disposal of its victims.

The consensus of medical opinion seems to be that the virus or contagium of cholera, is a specific bacillus, which for its spread or diffusion requires a somewhat prolonged contact, and must be ingested in some way, or brought in contact with the alimentary canal through the use of infected water or food, inhaling dust from fomites, or the use of infected utensils or hands while partaking of food, or in using tobacco.

Now, it seems to me, one of the first and most important duties of boards of health, physicians or any other sanitary authority, is the education of the public—both orally and through the public press—as to the nature of cholera and its contagiousness. Giving them "line upon line and precept upon precept," not only preparing them to take all necessary precaution against contagion, but to eliminate any unnecessary fear through ignorance of its mode of attack—which fear is often one of our worst elements to contend with—and which will render the work under consideration easier to execute. Man is devoid of reason under the influence of panic, nothing remains but the brute instinct of self-preservation.

This education being accomplished as far as possible, we are at least "half-armed for the fight," which I recommend be conducted along the following lines. When cholera breaks out in your locality, or you have warning of its near approach, let your board of health divide your municipality into a convenient number of districts, and for each district provide a trusty man, with horse or team, and a cheap hearse or dead-wagon which may be made as follows: An oblong box, made of plank 1½or 2 inches thick, 7 feet 6 inches long, 30 inches wide and 24 inches high, rabbited or joined together as nearly air-tight as possible. The front end to be permanently closed, the rear end forming a door, by being hinged at bottom and fastened with hasp or some convenient device at the top—the bottom of this box should be made 12 inches longer than sides and top—to be used as a foot board for driver—and provided with two or more rollers. The whole outside to be painted black, or better still, covered with black oil-clock which would be an additional safe-guard against the escape of effluvia. This box can be bolted on spring bars of any ordinary market wagon—even second-handed if strong enough—and you have a cheap effective hearse or dead-wagon, which will not scatter infection in its wake, and may be flushed with a disinfecting solution as often as may be necessary—and which in appearance will not be repulsive to the finest taste. Thus made, it will contain any ordinary casket and covering box. An adjustable seat can also be placed on top of front end for driver. Now, with your driver provided with a long rubber coat and gloves or mittens, he is ready for a call, which call should be made as soon after death as the body can be prepared for burial, and the grave made ready for its reception. All ceremonies that will consume time and endanger the lives of others should be strictly forbidden. Immediately after death the body—without any preliminary washing or unnecessary handling—should be wrapped in a winding sheet saturated with a strong solution of bichloride of mercury (1 oz. to 1 gall.), and placed in coffin, not to be again exposed under any circumstances. This to be done by the undertaker, attending physician, or sanitary policeman. If the body was not coffined at all, but swathed in a sheet or cloth, saturated as above, placed upon a board four or five inches longer than the body and covered with a pall, it would be the better mode as we shall see further on. Then call your dead-wagon, and let the driver respond in a quiet and respectful manner, and with necessary assistance quietly place the remains therein, close it and drive away, slowly at first until out of sight of relatives of the deceased, when the speed may be accelerated as the exigencies of the times may require. Every grave should be provided with an extra sexton or assistants, and a barrel of quick-lime oxide (of calcium—*Ca O*). The cover of the casket or coffin should be loosened and laid aside when deposited in the grave. Next cover the body with lime and follow with the earth. Now, what has been or will be accomplished when the chemical forces we have set in motion shall have accomplished their work. To answer this question we must review our subject somewhat.

All animal bodies after death undergo putrefaction. Putrefaction is a slow combustion. It burns out a small portion of carbon and hydrogen in every molecule. The atoms are then supposed to fall together and rearrange themselves as required by the known products of their decomposition. This decomposition consists in the combustion of the carbon of the body, with oxygen, while the hydrogen divides itself between the nitrogen, phosphorus and sulphur forming ammonia (NH_3) phosphuretted hydrogen (H_3P) and sulphuretted hydrogen (H_2S). These gases are the causes of the effluvia or offensive odor in a putrefying body. Secondly, what is cremation but a more rapid oxidizing or combustion of animal matter, consuming some of the gases, and driving others off into the atmosphere, leaving a residuum of ashes consisting of alkaline and earthy salts.

This brings us to the solution of our first question, viz.: The effect of applying quick-lime ($Ca\ O$) in a sufficient quantity to a dead body, would be to burn or dry out all the moisture from the tissues. The gases would unite to form nitrates, phosphates, sulphates, etc., and the body would crumble into dust without giving off poisonous gases. Should there be much moisture present in the body, or soil in which it is buried, the $Ca\ O$ would unite with the water and form calcium hydrate ($Ca\ H_2\ O_2$) which unite fats to form lime soap, which is insoluble in water, and would not be carried in the water currents but filtered out in the earth through which it passed. An excess of quick-lime would give nearly the same results as cremation. The main difference being the time consumed in producing these results.

I have not thought it necessary to enter into all the minutiæ and specific details of the above plan, as they will be suggested by the exigency of each particular epidemic and locality; the object sought being to prevent the accumulation of the unburied dead, as at Hamburg, and consequent concentration of infectious and contagious material, a constant menace to the living. With the plan proposed there is no city, village or hamlet but what can provide against the "day of doom," and the desired end accomplished under the three most desirable conditions, viz.: Without violation of feeling or sentiment: much cheaper than the ordinary funeral, with hearse trappings and attendants; and lastly, the effective disposal of the cholera dead with minimum of danger to the living.

The Chair—Gentlemen, the subject is open for discussion.

Prof. Nelson—I suggest, if no remarks come spontaneously, that we pass on to the next paper. I take it the silence means that we approve the paper, which I think is the most admirable that has ever been presented to a meeting of this kind.

The Chair—It was a very practical paper. The next paper is by Dr. Thomas C. Hoover, member of our State Board, on the subject of "The Diagnosis of Cholera."

THE DIAGONIS OF CHOLERA.

By DR. THOS. C. HOOVER, Member State Board of Health, Columbus, O.

MR. PRESIDENT: The title of this paper on the programme does not exactly forecast what the substance will be. If the concatenation of symptoms which we call cholera were constant, did not vary in different individuals, then I might blaze a path from which none might go astray.

One of the practical lessons learned in the early morning of the professional day of every physician is that diseases are modified by individual characteristics and by environment. This is true of cholera. It is also true that the line of attack in cholera is along the digestive track, and that many of the symptoms, especially the prodromal or initiative, are very similar to those attending other diseases. Again, as a rule, cholera occurs at the same season that digestive disorders are usually prevalent, and thus another difficulty is added.

According to the present theory of causation of cholera the only positive diagnosis can be made by finding he cholera germ or bacillus in the excreta. This requires a careful bacteriological examination, and is only to be relied upon when made by those skilled in such processes, and who are supplied with the necessary appliances. Under the press of an existing or impending outbreak of the dread disease suspicious cases should be taken care of by the guardians of the public health so that infection of others may be prevented.

The object of this paper is to draw up a rule for the guidance of the health officials so that they may discharge their duty most efficiently with the least possible inconvenience to the public.

Let us begin by considering a typical case of infectious cholera and then note the other diseases which have symptoms in common.

The period of incubation, or the length of the time required for the development of the disease after the poison has been introduced into the system is not definitely determined. It is believed to vary from a few hours to a few days.

The symptoms are divided into four stages, as follows:

First, the stage of invasion, or premonitory stage. Second, the stage of painless diarrhœa. Third, the algid or collapse stage. Fourth, the stage of reaction.

The prodromal or initiatory symptoms are a feeling of weight in the region of the stomach, rumbling in the bowels, general feeling of weariness, a peculiar pallor, anxious countenance, and in addition various nervous symptoms as vertigo or dizziness, ringing in the ears, headache and tremulousness. In some cases, there are, for a couple of days, fluid discharges from the bowels, sometimes followed by exhaustion. This stage may last from a few hours to a week; it generally continues for about two days. In some cases the diarrhœa is attended with cramps, giving it more the semblance of cholera morbus or nostras.

The second stage is attended with a profuse diarrhœa, generally beginning in the morning or in the middle of the night, and the discharges flow from the bowels in a stream. They are not attended with pain, and after the first two or three all fecal odor disappears and the color is straw or whey-like. The stools vary in number from two to more than twenty a day, and are often accompanied with attacks of regurgitative vomiting. The average amount of fluid discharged by a patient in twenty-four hours is estimated at sixty ounces. Exhaustion follows the frequent large stools, and the patient becomes apathetic or indifferent. Loss of appetite is complete, and the thirst is intense and constant. The stools lose the natural color and become like rice water in appearance. The matter vomited from the stomach is at first the contents of the stomach, afterward so-called bilious vomit, and finally a clear watery fluid. The tongue is dry and covered with a thick white coat; countenance becomes pinched and of a leaden hue; the pulse fails; there is often distressing hiccough, and more or less difficulty in breathing.

The third, or stage of collapse, is ushered in with a marked coolness of the surface, beginning in the hands, feet and face, and finally extending all over the body. The temperature in the axilla may fall as low as 72° Fahrenheit or even lower, while the rectal temperature registers 101° or 102° Fahrenheit. The sweat accompanying makes the surface feel colder than it really is; the patient rarely complains of feeling cold. The skin is wrinkled and of a livid color. The features and extremities are pinched, the eyes deeply sunken, and have purplish rings around them. The patient is apathetic or stupid, and can only be aroused with effort. There are frequently recurring paroxysms of cramps in the muscles of the calves of the legs. The symptoms of this stage grow worse and terminate in death or there is a sudden improvement and the reactive stage is reached.

This stage is indicated by a cessation of the vomiting, the pulse reappears at the wrist and in the carotid, and the heart sounds become more distinct. The temperature rises, the skin warms, the face loses its deathly look, and the diarrhœa continues; the stools soon emit the fecal odor, and the color begins to return; the urine increases in quantity, is at first high colored and albuminous, and loaded with casts. The duration of this period lasts from one to ten days.

When we consider the prominent symptoms, or those which seem to be the most conspicuous, we are forced to admit that they are not characteristic of cholera, but are observed in other diseases also; the presence of an irritant poison in the digestive track may account for most of them. In violent cases of cholera morbus, the sporadic cholera of earlier times, the cholera nostras of to-day, the semblage to epidemic cholera, is so marked that the ablest diagnosticans hesitate to make a positive diagnosis based only upon the symptoms, if there is co-existing an epidemic or endemic of the true infectious disease, even at a somewhat remote point. During the late engagement with the dread disease at our eastern ports, a number of cases were placed in isolation hospitals until sufficient time could be allowed for the necessary examination of the discharges. Some of them proved to be the genuine disease, while many were fortunately found to be a severe diarrhœa, or so-called cholerine, a term coined for the occasion.

The present view of the cause of cholera, and one that seems to be admitted as probably true, is that it is caused by the introduction into the alimentary canal of a bacterium called the Koch's or comma bacillus. That this germ is capable of retaining its virility under a great variety of conditions, and can be carried in innumerable ways to any distance. Different articles of food and drink serve as a media for its introduction into the digestive system of individuals, and that being its habitat, or most favorable location for development, it rapidly multiplies, and finally produces the train of symptons I have repeated to you.

One can readily comprehend the multiplicity of ways by which this microscopic animal may find an entrance into our mouths and thence into the succeeding portions of our digestive apparatus. The briefest contact with an infected object may infect you, or convert you into a medium for the infection of a third party.

These brief suggestions of the occult character of the infection may indicate the difficulty of tracing the origin of the cases. It seems to me that we must be impressed with the great necessity for the strictest and most scrupulous precautions against its distribution.

The prevailing opinion of health authorities is, that we will in all probability, have to array ourselves against cholera next year, and for the protection of our country against a scourge. What cases of sickness shall be regarded as "suspicious" or possibly cholera, and consequently isolated until it is either proven that they are not cholera or have recovered from an attack. Being a firm believer in the truth of the old adage "An ounce of prevention is worth a pound of cure," I am urged to advocate that the limits should be wide. That all cases which present the more prominent symptoms of either stage of the typical case which I recited to you should be considered suspicious. Cases in which the symptoms are not well marked should be kept under close observation until proper tests can be made, and their character definitely proven.

The Chair—The paper is now open for discussion.

Dr. Prendergast—If there is no further business, I move we adjourn till the evening session.

EVENING SESSION.

THURSDAY 7:30 P. M., *January 26, 1892.*

The Convention was called to order by the President, who said: The first paper to-night will be by Dr. B. Stanton, member of our State Board of Health from Cincinnati, on the subject: "The State's Duty in Preventing Cholera."

THE STATE'S DUTY IN PREVENTING CHOLERA.

By B. STANTON, M. D., Member State Board of Health, Cincinnati, O.

I wish to thank those who have arranged for this meeting for the compliment contained in the invitation to take part in the proceedings. I am requested to speak of the State's duty in preventing the introduction and spread of cholera.

Since this subject was assigned me, I have had no opportunity of conferring with the other members of the board, and hence they should not be held responsible for any views that I may express.

The subject is one of much importance, and, I think, one in regard to which there cannot be much difference of opinion among sanitarians.

In the first place I will say that one duty of the State is to encourage just such meetings as this, not only when epidemics are threatening us, but at other times for comparison of methods of work, for co-operation where practicable, to keep up an interest in sanitary work, to confer concerning local sanitary questions, the details in regard to the prevention or restriction of preventable diseases, matters pertaining to isolation and disinfection in contagious and infectious diseases, their limitation to the first case of cases, or to the locality in which they first appear—in a word to consider all questions relating to preventive medicine—the most important branch of medical science. As these are matters having important bearing upon the health of the people, and as "public health is public wealth" it follows that the State should have as much interest in promoting those objects which have a bearing upon the health, strength and effective force of its people as in caring for their property.

The news of a recurrence of cholera in Russia, Germany and France may be taken as an unmistakable sign that the dangers that threatened us last year are to be repeated, and that we will soon be called upon to put to the test what modern science can do to keep out the pestilence. Your presence in such numbers at a meeting called to consider matters relating solely to cholera, is an indication that you are alive to the importance of a subject that will soon engross the attention of the whole country, and which will demand the utmost vigilance on the part of our quarantine and sanitary authorities. Knowledge of the existence of cholera in Europe and knowledge of the fact that this is a disease that follows the channels of commerce should be ample warning for us to put our house in order. It is only by a vigorous application of quarantine precautions that it will be possible to prevent the introduction of cholera into this country. To keep out the disease requires organized warfare, and such organization as can successfully combat the introduction of such a disease as cholera can only be made effective by the co-operation of national, state and local authorities.

In the prevention of an exotic disease, there are two things to be considered. First, coast and border quarantine to prevent, if possible, the introduction of the disease; and, second, the methods of dealing with it should it gain admission.

The first of these should be under the control of the general government It is now a patch-work conducted by the maritime states, each on its own method. or without method, wisely or unwisely, efficiently or inefficiently, according to the integrity and ability of the quarantine officers and the liberality of the state having it in charge.

It may be some digression from my subject to stop to discuss the matter of national or state control of quarantine, but I crave your indulgence a few minutes while I express my views.

In my opinion, a maritime quarantine, to be effective everywhere, should have unity of methods, should have but one head to give direction to all its efforts. If all states would do their whole duty, there might be less necessity for national control of quarantine affairs, but some of the states most exposed fail to appreciate their responsibilities in this particular. The inefficient quarantine establishment at New York is a constant menace to the whole country, and should be an admonition to all health authorities to be on their guard. The feeling of confidence that we should have in regard to our most important port of entry is much weakened by some occurrences of the last few weeks. Note the recent entrance of the deadly typhus and the more recent entrance of a small-pox infected ship having passed the barriers of quarantine, its hundreds of infected steerage passengers, with their baggage, being permitted to go, within a few hours, to all parts of the Union without one note of warning being sent to the health officers of the town to which they were destined. A score or more of them reach our State, and within a short time at least four cases of small-pox develope, and from these a frightful epidemic may arise. In Michigan there has also been an outbreak traceable to the same source, and no doubt others will be heard of. For permitting these persons to land and spread the disease with which they became infected on shipboard, instead of vaccinating and quarantining them until all danger of transmission was passed, the quarantine authorities of New York are censurable. Such a quarantine is a source of danger—worse than none at all, for it lulls us into a false feeling of security.

A national system of quarantine might possibly cost more, but that cost would be more equally distributed. Such a quarantine, being governed by laws, rules and regulations uniform in their operation, would cause the minimum amount of restriction to trade and travel and would give the greatest security to the country.

However much may be done by the coast and border states, and however well it may be done, there will still remain reasons for national control of all matters relating to coast and border quarantine and sanitary matters, inter-state commerce, etc.

If hostile fleets threatened New York would the common defense be left to Tammany? Is foreign invasion from pestilence to be less feared? Are the quarantine stations of the Atlantic States properly supplied with appliances for the cleaning and disinfection of ships, passengers, baggage and cargoes? How many of them have hospital accommodations for the isolation and care of the sick? How many of the maritime states have, this winter, prepared to resist the threatened invasion of cholera? With one exception the ports of the United States are not equipped to do the work that the coming summer may demand. Our existing quarantine is a quarantine only in name, and will remain such until federal authority commits this trust to a higher custody, where it properly belongs.

Cholera is a disease following the channels of trade. It has as fixed laws governing its course as storms, forecasts of which are given by a corps of meteorological observers in the service of the general government With as much accuracy can we foretell the approach in a given locality of a cholera epidemic, and as we can more surely guard against it, is there not as great an obligation to conserve the public health by supervision of quarantine matters, by the collection, classification and distribution of information looking to the protection of public health, and by the diffusion of knowledge from an authorized source for the benefit of the whole people?

The interests of commerce are often supposed to be in antagonism to public health interests. The demands of trade are regarded as of paramount importance, and the experience of Hamburg in concealment is liable to be repeated. Legislation not regarded as compatible with mercantile interests will not be enforced if left to local authorities. Should our government hesitate to pass and enforce laws regulating quarantine, immigration and all other matters having for their object the protection of the public health? France and Germany legislate American pork out of those countries. Should our country hesitate to legislate cholera from ours?

The outbreaks of pestilential diseases are educating the lawmakers the civilized world over to the importance of organized efforts to suppress them. Experience has been a dear teacher but we have not yet fully learned the lesson. Not until cholera had destroyed 54,000 lives in England in 1831, did that government grant any powers for the enforcement of sanitary regulations. The experience of that year was, however, soon forgotten and another outbreak in 1838 found that country as illy prepared to cope with the disease as before. Again some inefficient legislation followed. In 1854, 20,000 persons fell victims to this disease, and from bitter experience England learned the lesson that led to the enactment of the most efficient laws, and the better enforcement of sanitary regulations, so that when the disease reappeared in 1866, places that had suffered most in the former visitations were almost exempt from the scourge. From this experience legislation has been extended until England has the best health laws of the world, and the result has been the perceptible increase of the life-rate, and a reduction of fifty per cent. in the mortality-rate in the urban population. Shall we not profit by this instructive lesson? Should not these splendid results encourage us to greater efforts in the same direction? Should not our legislators—state and national—give us better laws for the prevention of disease? Should they not create bureaus or boards of health clothed with the fullest powers, and supplied with adequate means to act promptly and efficiently?

A little such legislation properly carried out might have prevented the introduction of cholera into this country in 1866—an epidemic which scourged the metropolis of our State, paralyzed her trade and brought upon her people untold misery and anguish. From lack of sanitary authority and intelligent co-operation that epidemic cost more in loss of lives and interference in business in three months, than the State Board of Health would cost in a century.

The second thing to consider in the prevention of the spread of epidemic diseases is the duty of the State and local health authorities in dealing with those diseases, should they gain admission. There are difficulties to contend with that may render it impossible for the most efficient quarantine to prevent the introduction of such diseases, owing to the long period of incubation, or dormancy of some of them, and the relative shortness of the voyage from an infected port, the possibility of the poison or the disease being carried in infected clothing or merchandise or in some other manner invisible or unrecognizable, there is danger that the disease may first disclose itself in some interior point. While the actual case of sickness may not pass unrecognized, there are many ways in which the *contagium* may be so concealed that even the most effective practical quarantine could not be regarded as always reliable. Our State may be the starting point of an epidemic that may sweep the land. Are we prepared to meet the disease and stamp it out? Is not this a work in which we all have a vital interest?

The functions of the port health officer cease when he has passed the immigrants. They are soon beyond his reach and control, and it becomes the duty of the State and local authorities to look after them should any disease dangerous to the public health occur among them.

Each state should have its board to look after matters relating to public health, and to give direction to, and secure uniformity in, sanitary regulations within its border. Cities, towns and incorporated villages should have their local boards to look after municipal hygienic affairs. Each township should, through its trustees, look after rural sanitation. In all matters relating to the general good these local boards should co-operate with the State Board.

The State Board of Health should be given absolute jurisdiction in all interior and interstate sanitary affairs, and all matters relating to interior quarantine and the enforcement of all sanitary regulations in times of public peril from any communicable disease. It should be empowered to do whatever science has demonstrated can be done to remove the causes which tend to destroy human life, health or happiness; and it is the duty of the legislature to confer these powers and furnish ample means to carry out this work.

In times of the threatened introduction of any dangerous exotic disease, the State should secure the thorough equipment of a quarantine of observation, establish such regulations as will prevent the introduction to, or transmission from, the State along the lines of commerce, of any contagious disease, and do such other things as will secure the general welfare.

Medical inspectors should be stationed along the borders of the State at the crossings of the trunk lines of railroads, to inspect the passengers coming from places where dangerous diseases prevail. Work of this kind was inaugurated last fall when danger was so eminent, and while the emergency did not arise for the exercise of the limited powers the Board now has, there was a readiness to act should it become necessary; and more than this, there was experience in organization for such work that will be useful in coming emergencies. Our greatest needs were met; our corps of medical inspectors and their assistants were on the ground for the inspection of immigrants and others coming from infected places. Their duties were well done, and they are now waiting to be paid for their time and for the money expended by themselves for sustenance while doing this important work. It is not the fault of any one that there was no fund from which they could be paid, for the dangers of cholera were not anticipated last year, but now that a recurrence of the disease is a possibility, if not a probability, it is time for such action to be taken by our legislature as will enable the State Board of Health to begin the work of preparation, which is necessarily a work of time, and to place at the command of the Board a fund from which it can meet, as they arise, the expenses of such work. It is not right to ask inspectors and such assistants as would be required should cases of cholera be found on trains in our State, to bear their own expenses and trust to the uncertain action of a legislature for an appropriation from which they could be compensated for their arduous and dangerous labors.

The people are aroused to the threatened danger and demand protection, and their servants—the law-makers—should provide the means to pay for it. It would be far better to incur the expense of preventive measures than to risk the cost of an outbreak of cholera. There is no longer any difference of opinion in regard to the value of state health regulations, and those states that have boards of health on whom are conferred the most ample powers to deal with the spread of epidemics, will be found the most likely to escape an outbreak. Not only a liberal appropriation, then, should be placed at the disposal of the State Board to meet emergencies that may arise, but more liberal appropriations should be made to meet the ordinary expenses of the Board. The appropriations of the last few years have been meagre—not enough to enable the Board to do all that it should have done in the matter of preventing the spread of the indigenous, preventable diseases, and it is well known that the exotic pestilential diseases claim fewer victims than succumb to certain indigenous diseases that are equally subject to control by well known sanitary measures. The hands of the Board have been tied for want of means to carry on its beneficent work.

The value of well directed effort in diminishing disease and prolonging the term of life is no longer questioned.

Setting aside sentiment and regarding this question only in its financial aspect we will find that it pays to keep well—to expend money to keep out sickness which paralyzes labor and wastes capital.

The State should contribute liberally to the prevention of all epidemics among its people. There are now on the statute books of Ohio laws prohibiting the shipment into the State, during the summer months, of cattle from points south of the line below which Texas fever prevails, also laws intended to prevent the spread of contagious diseases among hogs and sheep. The enforcement of these is carried out at a heavy expense to the State. Should she be less liberal in regard to the introduction and spread of diseases affecting her people? Is the cattle ranch more important than the hearthstone? Is the hog better than the man? Are the calves and lambs dearer to the heart than the children of the State? Are all these animals productive of greater revenues than those yielded by its people? The welfare of the State and its highest material interests depend largely upon how far it promotes the health and life of its citizens. Considered solely from a financial standpoint, sanitary work pays.

One duty of the State Board of Health is the dissemination of news in regard to the prevalence of dangerous diseases. It should have the power to compel immediate reports by health officers and physicians of such diseases. Informed of their presence, it could take such action or render such assistance as might be required in instituting the best known means for the restriction of the disease.

Another duty of the State is to keep her people instructed in regard to the importance of sanitary work about their homes. In both city and country the cleanliness of the house, the cellar, the back-yard, the alley and the street should be insisted upon, and the conditions favoring the spread of disease, wherever found, should be regarded as a disgrace to those responsible for public, municipal or domestic hygiene. More than ever before must the crusade against dirt be carried on. We must look to the purity of our food and water supply, the sewerage of our cities, the disposal of garbage and other refuse.

To carry out these duties the State should encourage its board of health in the publication and distribution of the Monthly Sanitary Record—a journal for the popularization of sanitation, for the distribution among the people of information in regard to public health, improvements in plumbing and other sanitary appliances, and existing knowledge applicable to the prevention and restriction of the most dangerous diseases. That the popular demand for this kind of knowledge is increasing, shows that greater attention is given to such matters, and its distribution is doing much for sanitary progress, and the light of sanitary science will secure the enforcement of sanitary law, that at such times as this, when cholera stalks abroad, will lead to good results.

The State should encourage the study of bacteriology—"the mother science of the sanitary art." The delvers in this science are the promoters of our entire sanitary system. From their work scientific sanitation has developed, and the progress in this direction has been almost without State aid.

The State should exercise, through its board of health, the right to interfere with the regulations of railroads whenever they are found to be antagonistic to the demands of health. It should prohibit, in times of epidemics, the scattering of excreta of the passengers along the railway tracks. It should compel railroads to provide receptacles for such material, the contents of which should be speedily disinfected or destroyed by cremation.

In my opinion the State Board of Health should have the power to order the cremation, where possible, of all bodies dead from cholera, or early interment, with oxidation by quick-lime. Let me recall the fact that in 1866, when a few cholera immigrants had been buried at Ward's Island, N. Y., an epidemic started almost immediately in the part of the city nearest to that burial ground.

Some of the duties the State Board of Health should have and exercise will be touched upon by my co-laborers and others. Dr. McLean, of Elyria, has already spoken of the best means of disposing of the dead; Prof. Nelson will consider the question of water supplies as carriers of cholera, and Dr. Miller will tell us of the immigrant as a factor in the introduction of cholera—all matters under State control, and of importance in connection with the prevention of the spread of cholera.

In a word, I may say that it is the duty of the State to make all possible provision to prevent at all times the preventable diseases. When *semper paratus* is her sanitary motto, then will she be in condition to meet emergencies such as now threaten us.

In carrying out its important functions the greatest obstacles the health board would have to contend with, would be the indisposition to spend money freely enough to do this work efficiently, and the oft-repeated cry that we must do nothing to interfere with the ordinary course of trade. The demand is made by business men that we shall stop the epidemic disease, but when we put into operation the only efficient means, we are often charged with interfering with their rights and liberties in preventing their getting their goods in the cheapest markets. These are matters dearer to some than the health of the community.

Next to the development of the intellectual and moral man, the preservation of life and health is the noblest purpose of all law, and for the furtherance of these purposes the State has a responsibility from which she cannot morally shrink.

The Chair—The paper of Dr. Stanton is now open for discussion.

The Chair—We will pass to the next subject, a paper by Prof. E. T. Nelson, of Delaware, member of the State Board of Health, on the subject of "Water Supplies as Carriers of Cholera:"

WATER SUPPLIES AS CARRIERS OF CHOLERA.

Edward T. Nelson, A. M., Ph.D., Member of the State Board of Health, Delaware, Ohio.

The fact is, whether we will or no, we are surrounded by unseen armies of pigmies and are daily called upon to give them battle. This is the cause of the pestilence that walketh in darkness, and that wasteth at noon-day. Thus far, these armies have gained the victories, since dead men tell no tales, and few indeed have returned from the shades of the grave to relate their experiences. Only recently have we learned that there is an actual living enemy to fight.

A wise general going forth to war must know four things, and must know them most thoroughly, viz.:

1. The history and character of the foe.
2. The line of march.
3. The probable plan of battle.
4. The strength and disposition of his own forces.

The American Republic stands to-day in the face of a mighty conflict. The cholera, like a marmot is sleeping out the winter in many a foreign seaport, and Europe is but little better than a vast pest-house. Our seventy millions of people, our gigantic and varied industries, our surprising and surpassing wealth, our Exposition, our schools, our churches, and our homes stand aghast at the thought of the spectre and eagerly scan the eastern sky.

Millions of lines, finer and more invisible than a spider's web, extend from those shores to this, and along some one of these lines the cholera is as sure to come as is the summer itself. If we would win the battle, we must take the field at once, and hold it at all hazards. To-night we hold a council of war.

It is most important that we acquaint ourselves, first of all, with the several lines of travel which the armies of cholera germs will take, in order that we may be better able to meet them at their coming.

Certain well established laws lie at the foundation of all epidemics, and to these I must call your attention, in order that we may rightly understand the great problem before us.

First—Diseases are always carried. Too much stress cannot be placed on this statement, for it is the most important one that will be brought before this conference of health officers. In every case and class, we assume a focus and a genesis. In one way or another, the disease spreads from the focus to other places, and from the genesis to numbers of individuals. A ship load of pilgrims sails from Bombay for Mecca, and a line of cholera graves marks the route. No one doubts for a moment the origin of such an epidemic. A child enters a schoolroom, coming from a home where there had been two deaths from diphtheria within ten days. Seven days later, the four children nearest the lad fall ill with the disease. No one doubts for a moment the origin of such an epidemic. A man suffering from small-pox enters one of our cities, walks the streets, and circulates among the workmen in a large factory. An epidemic is the result. No one doubts for a moment the origin of such an epidemic. So would it be in one hundred cases if we had time to collect the evidence. So would it be in every case. The disease begins somewhere and is carried by somebody.

Secondly—The disease is always carried. It never travels on its own account or by its own conveyance. The sooner we learn this great fact, the sooner we shall gain the victory. At every outbreak we seek for the first case and true source of the contagion. We expect to find it in some individual who has recently entered the neighborhood, and who was exposed to the disease elsewhere. We may not be able to find this person, but even then we do not charge the responsibility for the spread of the disease on the disease itself. We do not charge it to "spontaneous generation." We know that there was a first case, and we continue our investigations.

Thirdly—The diseases of the world are not half so bad as they have been painted by a frightened public. Infection belongs not so much to the disease as it does to the place and the man. It is the man that is contagious, and not the disease. A physician, after a full investigation of the recent epidemic of cholera in Europe, claims that he could not learn of a single case where a man, living a moral and hygienic life had died of the cholera. That sweeping statement will not stand the test of a wider observation, nevertheless it is true that a filthy ward and its inhabitants will explain the virulence of every epidemic. The character of the disease is not so much a matter of contagion as it is of hygiene.

Fourthly—The germs of a disease may be carried from the given focus, and yet fall upon a sterile soil. This fact is coming to have more and more weight with every passing year. We are learning very rapidly now-a-days, that an epidemic depends more upon the place and the man than upon the infection. Quarantine is giving place to municipal and individual hygiene. If we had perfect confidence in the hygienic condition of our several cities and towns, and if we had perfect confidence in the skill and wisdom of our health officers, both State and local, I do not think a single member of this Convention would favor a national quarantine, or the suspension of immigration for even so short a period as one year, solely as a measnre for preventing the introduction of infectious and contagious diseases. Our efforts in these directions indicate to the world both our weakness and our doubts.

Fifthly—While it is undeniably true that some diseases are carried by the air, or may be imparted directly from one person to another, the evidence is very rapidly accumulating that the only entrance to the body for many other diseases is the stomach, and the only danger, food-stuffs and drink.

It seems only yesterday when typhoid fever was placed among the infectious diseases, and when it was claimed that it traveled in the air or arose *de novo*. Few, if any, to-day will doubt the connection between this disease and a polluted water supply, or grossly contaminated foods. The epidemic at Plymouth, Pennsylvania, furnished the evidence that was lacking, and proved to the world the true origin of all cases of typhoid.

We have been altogether too willing to cover our ignorance with high sounding words and references to the acts of Providence. We have in our imagination, seen great waves of disease rolling across the sky, when if we had only turned our eyes downwards we should have found the true source of the epidemic in our own houses and yards.

We repeat that diseases start from a focus and a genesis; that they are carried about by the agency or through the carelessness of man; that the virulence of the disease is rather a matter of the place and the man than a property of the disease itself, and that there is such a thing as a perfectly sterile soil.

Let us now apply these principles in their order to the case of cholera, the disease under consideration:

First—This disease has a genesis and a focus. If not native to India, the cholera is rarely, if ever absent from the bounds of that great empire, and may by regarded as endemic. The scientific investigations of the officers of the British army in India warrant us in claiming that many of the most terrible of the epidemics of this disease have been traced back to a single case, and that the spread of the plague from that point has been noted with as much accuracy as the march of an army. Observations by Koch and Klein show that cholera cannot start *de novo*, but that it always spreads from some focal point.

Secondly—Cholera is always carried. It never travels on its own acaccount, or by its own conveyance. Formerly, three years were consumed before an epidemic in India reached the shores of England and of the United States. The wind blows as of old, and the greater currents of the atmosphere are unchanged in force or direction, but the so-called waves of cholera have taken on a speed that is befitting this age of electricity. Three years of time are crowded in to as many months or weeks. The disease takes first-class passage on steamer and rail-car. The germs breakfast in Bombay and take dinner in Cairo. They always follow the migrations of men, and are never found outside of the lines of travel and commerce.

Thirdly—Cholera is not half so bad a disease as it has been painted by a frightened public. Here, as in many other cases, the infection belongs to the place and to the man rather than to the disease. During the last epidemic that visited St. Louis, certain wards and streets escaped as completely as if there had been no cholera, while other wards and streets decimated. This was a matter of place rather than of disease. During the epidemic of 1866, at the London hospital there was a staff of over one hundred physicians, nurses and porters. All these persons were in the midst of the plague from its commencement until its close, and all escaped with the exception of five, and they lived outside of the hospital in the infected districts. It is still more interesting to note that of the eleven women who worked in the laundry, all escaped with the exception of one, and she lived in the city outside of the hospital. Dr. Frazer, surgeon-in-chief, is satisfied that not a single case of contagion can be traced to the hospital. It is stated on the authority of the head nurse, that not a single case of cholera originated in the hospital of Hamburg during the recent epidemic in that city, though the sick were often placed two in the same bed and the dead in long rows. Amid the gloom and excitement, scores of suspects were hurried off to the hospital who were afterwards found to be suffering from some other disease. Not one of these persons contracted the disease from the cholera patients with whom they were forced to associate. It would seem as if the safest place at the time of a great epidemic of cholera would be where there is the most sickness. All of these statements point to the fact that cholera is not infectious, and that the danger has been very greatly overestimated. It is probably not contagious except in one particular direction, which can be well and carefully guarded.

Fourthly—There is such a thing as a sterile soil. There are places where the sanitary conditions are such that cholera can not gain a foothold, even though it be frequently introduced from without. England prides herself on having reached such a condition for many of her towns and cities. Hence no attention is paid to quarantine, but on the contrary disease is as free to come as is trade itself. She depends upon notification, good local service and sanitary inspection. The condition of all our towns might be so improved between this time and midsummer as to make an epidemic very doubtful, and mild in character, in case it should break the bounds and enter our State.

What is true for the town, is true for the people who make up the town. A man, being infectious, invites the disease by his mode of life. A constitution enfeebled by vice and excess, is open to the disease, and is a hot-bed already warmed and made up. The opposite conditions will so fortify a man as to enable him to pass through an epidemic unscathed.

Fifthly—Cholera can only be taken through the mouth and stomach. I should be the very last to advocate new views simply because they are new, or urge a theory because it seems plausible and is sustained by strong arguments. Especially should I hesitate when such views are in conflict with the opinion of any true investigator.

Pettenkofer, the great German sanitarian, believes that the disease may be carried in the air for short distances at least. Dr. Lewis C. Parkes teaches the same doctrine in the third edition of his work on hygiene, just issued from the press in England. While these men live it is not becoming in me to be dogmatic. In the event of an epidemic it would be wise to regard the air as a possible source of infection. Nevertheless, having admitted so much, I may now add that every fact of law and of evidence seems to point directly to the conclusion that cholera comes to us always and only through the mouth and stomach, and that in 99 per cent. of the cases the source of the so-called contagion is a polluted water supply. In India, where all the water for domestic purposes is empounded in open excavations in the ground, like those near brickyards in this country; in India, where the people wash their soiled clothing by the side of these same tanks, and allow the waste water to flow back into them in innocent disregard of all sanitary laws; in India, where the people deposit all ordure on the surface of the ground, not having in most cases even the pretense of a pit or cess-pool; in India, where the people drink the water in which they have just bathed, cholera is never absent. It is not necessary to invoke the currents of the air to explain the constant occurrence, or the terrible virulence of the disease. And yet, in this same India, the people who are brought under the civilization of the West, through the labor of the Christian missionaries, and who adopt new modes of living with their change of religion, escape the cholera as completely as if there were no such disease.

Persia, Russia and even Germany teach us the same wonderful object lesson. The cities and towns where the cholera becomes an epidemic are those in which, through poverty or indifference, the people have a polluted water supply.

Even Pettenkofer has been compelled to notice that there are five towns in Silesia where up to the present time this disease has never gained a foothold, even when it was raging in maddest fury all around them. They stand out like oases of life in the midst of the desert of death. They have a common water supply, and one that is safe from contamination owing to the peculiarity of its situation. Cholera was introduced into the Netherlands from Hamburg during the month of September, 1892, at the time when the whole world was watching the bulletin boards. It appeared in all the seaport towns of Holland and was disseminated along the lines of the canals, but there was no epidemic. No country in Europe is more densely populated, none so peculiarly situated, none where the sanitary conditions are so unfortunate. The people that have reclaimed their country from the sea have had the wisdom to guard it from pollution. Glasgow was formerly the first city in Great Britain to receive a visit from the cholera, and about the last to bid good-bye to the demon. The pure and priceless waters of Lake Katrine were turned into the pipes in 1866, and since that date there has been no epidemic, though the germs have been introduded on several different occasions.

Cholera is no longer a mysterious disease, nor are its laws occult. It breeds amid the filth of India, is carried by the pilgrims of Mahomet to eastern or southern Europe, drops down amid the most degraded populations and begins anew its work of death.

The editor of the *British Medical Journal*, who is at the same time the President of the National Health Society of England, says in a recent address, "We may lay aside all pedantry and mystery-talk of epidemic constitution, pandemic waves, telluric influences, cholera blasts, cholera clouds, blue mists, and the like terms of art with which an amiable class of meteorologists has delighted to cloak their ignorance. Cholera is a filth disease carried by filthy people to filthy places. It only developes where it finds dirty places, and the dirty habit of drinking polluted water and living on a polluted soil." Still later on in the same address, this distinguished sanitarian says: "Cholera does not travel by air-waves or blasts. We drink cholera and we eat cholera, but we cannot catch cholera as we catch measles, scarlatina, or whooping cough."

In the cases where the germs of the disease seem to enter the system by the air and the organs of respiration, there is another and far more probable explanation. Grant that the germs are in the sewers and that the sewer gas enters the dwelling laden with these germs. They float in the air to be sure, but they are constantly falling onto and into every form of food and drink that is exposed. As I write the earth is covered with a mantle of freshly fallen snow. The soot from thousands of fires is falling with the snow and giving it a black color and a defilement. So disease germs may enter the body through the contaminated foods and drink. It is by no means settled that the germs of this disease can be found in sewer gas or that they are carried by the air. It seems to me equally doubtful that the disease can be contracted from the effluvia of a cess-pool, as is claimed by some sanitarians. Before accepting such a statement, I must insist on digging up the yard and hunting for channels by which the poison-laden excreta can pass from the cess-pool to the drinking water. The following case might have been recorded as one of air-carriage but for a very fortunate discovery. In the town of Askhabad, on August 3, 1892, there were only eleven patients in the hospitals, and they were convalescent. The epidemic was over and the people were congratulating themselves on their escape. On that night twelve soldiers were taken sick with the disease. On the following day 400 persons fell ill, and within a few days there were over 400 deaths in the town. It was afterwards learned that some soldiers, just recovering from cholera, had gone to the stream which furnished the water supply, and had washed their clothes. The epidemic followed as a very natural result.

No city in the world gives us a more instructive lesson than that afforded by London. It may be stated in passing, that London grants the right to furnish water to the people of the city to private companies. These companies, eight in number, obtain the water from the Thames, the Lee, and from a few deep wells. At the time of the epidemic of 1849, it was noticed that the disease spread in those portions of the city that were supplied with the water from the Thames, and that the epidemic increased as the water was taken further and further down the stream. Since that time the companies have been compelled to remove their works up the stream, and to-day no water is taken from the Thames below Teddington, twenty-five miles above the city. The epidemic of 1866 visited those portions of the city having the poorest water supply.

Is it not a little remarkable that in the great work on cholera, written by Dr. Shakespere, and published by our government, the words "air" and "atmosphere" do not occur in the index in connection with the subject of cholera, and that no one of the hundreds of writers quoted gives it as his opinion that the disease is generally carried in the air, while many show by their investigations that it can only be carried by water? In the face of all this testimony the conclusion is inevitable that cholera is not an infectious disease, and that it is only contagious when brought in contact with the membranes of the ailimentary canal. It travels by the ordinary lines of trade and is spread by means of a polluted water. Our greatest danger is from within and not from without. In place of sending petitions to Congress, asking for a quarantine law and begging that body to save us from our sanitary sins, we should be converted and bring forth fruits meet for repentance.

The pastor of one of the churches in the city of Delaware, was preaching from the thought of removing mountains by an exercise of faith. He remarked that he never questioned the possibility of such work, or the ease with which it might be brought about, and added that if he had the men and the shovels, he would show the world how very simple a thing it is to remove a mountain. So, to-night, we, who in some sense, are placed in charge of the health interests of this great State, should take our picks and our shovels, and go to work at once to remove the mountains of filth that have accumulated at our doors. Let us show our faith by our works. This conference will be a failure if it does not lead us all to do something for the sanitary improvement of the towns of the State.

I have said that the cities and towns of Ohio might place themselves in a condition to resist the cholera should it come to us during the coming season as is now expected. This implies that they are not in a perfect sanitary condition to-day. There are plague-spots in Ohio, as dangerous to health and as inviting to the cholera as any that can be found in Europe. In a personal letter just received, there is a description of a "lot" in one of our overgrown villages. The writer says, "In a back lot, 35 by 45 feet, there are a well, one cistern, and two cess-pools as filthy as such places usually are. Besides this, all the refuse from a grocery is thrown out upon this same piece of persecuted ground. In the fall it was covered with soiled and rotten vegetables, whole melons and many rinds, spoiled meats and decaying fruits of all kinds. Two families live on an adjoining lot and use water from this well and also from the cistern which is always open." If there is such a spot in Ohio, the cholera will be sure to find it. Are there not many such places, and even entire towns within our borders?

Lima, at times, obtains her drinking water from a small stream, almost dry in the summer, which receives all the sewage and drainage from the County Infirmary and the Children's Home, less than one mile above the intake pipe. A single case of cholera at either one of those institutions might be followed by a thousand in the city itself. Youngstown receives its water from the Mahoning river. At three points within fourteen miles, that stream receives the sewage of large manufacturing cities. Bucyrus obtains its drinking water at times from a small stream that at Crestline, twelve miles above, has been converted into a sewer, and then condemned as a nuisance. What shall we say of Bellaire, on the Ohio river, with Wheeling, West Wheeling, Bridgeport, Ætnaville, and Martin's Ferry, all within six miles? What about the security of Steubenville, Marietta, Ironton, Portsmouth, and Cincinnati, each liable to the pollution from the next town above, as well as also by the general pollution of the river from which they obtain their water supply? The lake cities should have a pure water, but the zymotic death-rate shows that they are suffering from sewage contamination. Have we a single city that is safe, or one that dares face the coming summer? The great problem in the past, and the great problem for the immediate future, is the condition of the water supply of our Ohio cities and towns. Some method must be found by which these places can obtain the required amount in a state above suspicion. To this end we must make a complete separation of sewage and drinking water. This can be done by a better disposition of the sewage products. These products can be taken to sewage farms, as is the case in many parts of England and Europe. The sewage can be taken care of by some of the many known modes of filtration, or by a combination of precipitation and filtration. It has become a "fad" in the United States, to speak of the polluted water of London, as if that in some degree excused us for having one that is still worse. The London water is poor, but it is also better than any water supply in this State, for the reason that the Thames river, from which the supply is taken, is a protected stream. Place before you a map of England. Trace the Thames valley. Draw lines on each side of the river, and at a distance of three miles from the banks. These lines must also be drawn up both sides of every tributary. You have before you a valley six miles wide, and extending from London to the highest headwater. Into this valley not a drop of unpurified sewage or manufacturer's waste can ever enter. Every town, every commercial establishment, every slaughter-house, is compelled by enforced law to purify all sewage and all forms of polluted waters, until the effluent therefrom has a standard degree of purity. At any hour of the day or night, an officer of the government is liable to make a visit of inspection with full authority to abate any nuisance found to exist. In the month of May of 1892, the writer collected a bottle full of water from the effluent pipes at the town of Hendon. That water is as clear to-day as the water of the college spring near where this paper is being prepared. It is without odor, and under the microscope gives no evidence of bacteria. No such water supply is known in Ohio. Nothing short of such purification will save us from a threatened epidemic.

The Chair—Professor Nelson's paper is now open for discussion. Make your remarks as short as you can, as the hour is growing late.

Mr. Morrow, of Ada—Mr. President, I would not attempt to criticise the Professor's paper for a moment, but there is one thing I would like to hear discussed here in answer to his paper, and that is how to regulate our privy vaults in our towns. As he said, this lot, that he mentioned and gave you the small dimensions of in feet, is not an isolated case by any means. You will find them in almost every town. You can find plenty of them in our town. Then there is the hogpen nuisance. I would like to know of the Professor, if that is not as great a breeder of germ diseases as anything we have in our American towns to-day. Of all the things known to the human nostril, a filthy hogpen is the greatest nuisance in my opinion. Last spring, I tried to get our Board to pass a resolution banishing the hog from the corporate limits, but they were afraid of the people. The poor man had a hog, and he lived on the hog, and the hog lived on the filth of the house, etc. Well, finally the Board submitted it to a vote of the people at a special election, and they voted it down with an overwhelming majority, and it died,, a bornin'," and we've got them yet. Now, as a member of the Board, and interested in the health of the State as well as my neighborhood, I would like to hear the subject discussed, and some means introduced or spoken of whereby we can see some way to get rid of that. We adopted the tight vault system last summer, and after we adopted it, we were afraid it would prove a failure, and we put in half a dozen test vaults, and let it rest there until this year. We are ready now to commence work. We want to know what to do and how to do it in the best way. I know several of the boards of health have adopted the tight vault system, and probably they can give us some light on the subject. A number of us have no experience in it at all.

Dr. Young, of Chicago Junction—I would not for a moment try to discuss the Professor's paper. I feel that every word of it is true, and I heartily concur in what he has said, but I would like to tell just how we re situated, if I had time and could make you all hear it. We are hamered at our place. We are a new town, and we have to depend for our water supply on cisterns. What wells there are we have to go from 68 to 138 feet deep to procure water. There are eighteen wells of that character in the town. During an extremely dry season, as it has been for a year past, we have had to resort to large sulphur springs just within the corporate limits. There is an abundant supply of water for twenty towns of the same size, but unfortunately just outside of the corporation, and 1,500 feet from these springs, there is one of the vilest slaughter-houses in the State of Ohio, and it is beyond our power to do anything with it. Unfortunately, one of the owners, of the slaughter-house is one of the township trustees. You will see how we are hampered to protect our water supply. The drainage from that slaughter-house comes down through the ravine, and passes along the edge of where these springs come out. That is one source of contamination of the spring. In another direction, there is a large stretch of country that is drained down along the railroad and joining this drainage from the slaughter-house on the other edge, and the people have to drink from that, for that is the only place we could get it. We have made great efforts to get rid of this but so far have been unable to accomplish it. The supply of water we get through the wells is, I think, a good supply, but it is not all of us that can afford to put the wells down. The wells that have been put down are drilled and cased in iron casing. The supply has been analyzed by the railroad company, and is found to be of good quality in every respect. Our soil in that part of the State is a very heavy clay soil and strongly alkaline, and in the course of two or three years the cement in the cisterns is perforated with the alkali, and they receive the surface water and become hard and unfit to drink. If we could get some means to correct this, we would be glad to know how to do it. I think I could duplicate the Professor's story of the little lot, right in Chicago Junction.

Mr. Mills, of Bowling Green—Three years ago last spring, our Board of Health was reorganized; we had no code of laws governing the Board of Health, and we worked hard for two years before we got a code or system by which to govern the Board. No attention was paid to any of the proceedings of the Board of Health, and we became a laughing stock for the town people. But we have a code of laws now governing the Board of Health, which I can recommend to any town in the State of Ohio. I am proud that we have it. We have borrowed a portion of that from other localities, and you have the same privilege to borrow. We have had the same trouble from slaughter-houses, privy vaults and all of this matter to contend with, and I am proud to say we have removed two of the greatest cholera generators in the State of Ohio, and we did it because we stood by what we decided to do. We fought the cess-pools ever since I have been on the Board, for three years, and we only accomplished what we desired to do three years ago this last fall, but we have done it. They have objected, and they have remonstrated, and got the neighbors to sign remonstrances against the action of the Board of Health, but those cess-pools were filled. Now, gentlemen, I wish to make this remark, that whenever a Board of Health undertakes to please every person in the corporation, it will never accomplish anything. A Board of Health has got to make up its mind to legislate for the interest of the general good of the corporation, and whatever decision it makes to stand by it. Unless you do, you will not accomplish anything. Now we have, as I said, got rid of these cess-pools. We have also abandoned the hog business. We got rid of that. It is a great nuisance in any town. They ought not to be kept. I am a poor man, and I know every poor man in the town would like to keep a few hogs; but if we are going to be a detriment to the general public, I say we had better go without pork. We must not be selfish in this matter. We must educate ourselves for the interest of everybody, and not a few. We had to abandon the hog business in this way. We had to make an example of one or two. Now we have the co-operation of the entire citizens of our town. They are commending our efforts to establish a good sanitary system in the town of Bowling Green, and I believe the code we have adopted and put into pamphlet form is one that we can recommend to every Board.

Dr. Billings, of Medina—I wish to say that the writer of this paper strikes the point in my mind perfectly. A gentleman inquired how to make cisterns in soil such as they have in Chicago Junction. If he will see me after the meeting I will tell him how to make a cistern that will give soft water and never leak. In the section of the State where I reside, well water is nothing more nor less than a cess-pool. Vaults and privies are the curse of humanity. We have abolished them in our town, allowing no vaults to exist within corporate limits. Make them dry closets. I know, a year ago last summer, we had about forty cases of typhoid fever in our town. At that time our Board of Health was hampered by the best citizens in the town. At that time we issued a dictum, and saw that it was carried out to the best of our ability, that all the water used from wells should be boiled before using, and of these forty cases of typhoid fever, not one existed where the people used cistern water. They do not have any water from hydrants except for fire purposes. We have eradicated the hog pens. We have had some little trouble, as one gentleman has said, in regard to poor people. Now, I know if a man wants to live in a town and be poor all his life he wants to raise a hog. If it don't keep him poor, it will be because corn is cheaper than it is now. When you undertake to clean up a hog pen by means of lime, 4,000 bushels would not eradicate the smell from one. We tried pretty near that many in our town. I think the speaker, as I said before, struck the point that there are more deaths from our water than from any other source. Water is the foundation principle, and when drinking some of the water that exists in some of these wells, I always feel as if I am drinking from somebody's privy vault.

Prof. Redding, of Findlay—We have a water supply in our town that I think is as bad as any water supply in this State or possibly any other, and I would like to outline it in a few words and then ask Prof. Nelson what he thinks of it. We have a town of about 20,000 inhabitants, located on a very level tract of land, so level that I heard one old farmer say water would not run down hill on it. We have water-works and a reservoir with cemented bottom and sides. We take the water from the Blanchard river, which, during the fall and spring, is a stream perhaps 90 to 100 feet in width and six to eight feet deep. The basin includes more than half the country, in which is located two or three towns, and an innumerable number of farms. Nine-tenths of our people use water from wells that are less than fifteen feet deep, and a very few use water from wells drilled into the rock, from 60 to 80 feet in depth. Very few use hydrant water. Nine-tenths of our people use privy-vaults from four to six feet in depth. Very few have any cisterns. We have got a sewerage system outlined on paper that may be built within the next ten years, at the present rate at which the council is working. Taking it altogether, we have got a water supply that is, to my notion, about as favorable for getting cholera into it, if it can be gotten by a water supply, as any other spot in this State. Is that right?

Prof. Nelson—I should think so.

Prof. Redding—Now, I would like to meet Prof. Nelson, or some one else, after we get through, and ask him for a remedy, if there is one. I have made an analysis of the water from the wells that are ten or twelve feet deep, and from our drilled wells and hydrants, and from the reservoir and from the river, and I can't find anything that is very encouraging for a man that expects to live longer than next summer; and one of the reasons why I came to this meeting was to find some way or receive some suggestion that would benefit our people in a way of securing a purer water supply. We have gone to an enormous expense in building waterworks, and of course we cannot abandon them. As another gentleman said, we have a number of poor people. Of course, we have a number of glass workers who make seventy-five to a hundred dollars a month, but the saloon keepers get the most of it; and they can't afford a cistern, they say, and so they drink water from a well drilled into the ground. Their families drink the water and they drink beer. If there is any town in the State that has a worse water supply than we have, I would like to find it and compare notes, and I will extend all the sympathy I have got in my possession, if they can beat it in any way. Then, more than that, we have a certain class of individuals who insist in doing what they please regardless of the Board of Health or anything they may say or do. The Board of Health tried to pass some measures but didn't succeed. The city solicitor said they were of little value. They tried to get the council to do something, and they have failed. If I didn't have any property there, I would move out in a very short time. As a member of the Board of Health from Findlay, I would say that we would like very seriously and earnestly to petition some one either in this Convention, or a member of the State Board of Health, to offer some suggestions, and give us some plan of labor that we could go to work, and in the next few months left between this and warm weather, see if we could not remedy some of the defects, and thereby supply our people with a good, clean water supply.

Dr. Brown—I would say that in Canton we had the same trouble that probably every other city in Ohio had. Our water ran down through a ravine, all of the waste water from the barnyards, and everything for miles ran into the stream. We tried to filter it as it came down to the pumping station, but we found that impossible, for in summer time—I think our worthy Chairman will bear me out—that in warm weather it tasted very fishy. We then built a system of wells. I think we have now in the neighborhood of thirty or forty wells to the depth of three to four hundred feet, and instead of taking water from the stream, we pump directly from these wells, and I must say we have the finest water in the State to-day. It has cost an enormous sum of money, but I think any city that wants to have a water supply that is wholesome will find that they must go to the expense.

Mr. Young—I will say we are putting in a system of water for Bowling Green, and we have adopted the well system. We prefer that to any other, and they are cased so that no surface water can get in.

A Member—I think our friend, Prof. Redding here, is prepared to show that these wells—the supply of water from these deep wells—even if cased, is not free from objections, and very serious ones at that, and I should like to have him produce the analysis of some of the deep well waters. I don't see any reason why a deep well is very much better than a shallow well. It has some advantage in not receiving the surface drainage direct, but any rock that is water-bearing must have fissures in it through which the water can travel, and I should think that the surface drainage could follow these fissures as readily as the water can.

Prof. Nelson—I don't know that I care to say anything further. It is impossible to do the impossible, brother Redding, and if your condition is as you say it is, you had better rub out and begin over again. I discovered, when abroad, that the English towns are not afraid of spending money. We are afraid of spending money, and our town councils are afraid of spending money. A gentleman told about having some valuable springs, but there was a slaughter-house in the way. The average English town would buy that slaughter-house and buy the land about it, and prevent every inch of that land from contamination. The town of Liverpool has gone ninety-five miles for its water supply, and bought 2,500 acres of land about the water supply, and put men on that to guard it so that there will be no danger of contamination. Not a single house or farm or anything else is located on that property draining towards the dam and pool that they have made. Now they are going to have a pure water supply. It is brought that distance of ninety-five miles in closed pipes. Manchester has gone about seventy-five miles. London is preparing to go over a hundred miles, up into the mountains of Wales. Now, we have no mountain districts in Ohio, but there are some lakes in this State, and lakes that have not been contaminated, and if our towns want to get a pure water supply the time is ripe to get started and to buy this property while it is cheap, and protect it before it is contaminated, and then bring a clean water supply. I am in hopes we can arrange some way to get a pure water supply for the State from Lake Erie. I believe the time is coming when we will be compelled to go to the lake and construct a canal, a closed canal through the State, with feeders running off into the various cities. But, unfortunately, the waters of Lake Erie are not pure. Philadelphia is talking of going to the lake for its supply, and if Philadelphia can do that we certainly can here. Now, I think the best we can do in this State during the year is to do what we can towards closing up the cess-pools and disposing, in the best way, of our night-soil, and then instruct the people every day about the necessity of being careful about the use of their water, and have it boiled before it is used. If we will clean up our yards, and clean up these lots back of the groceries, and get rid of these cess-pools, there will be very little for cholera to feed upon outside of the water, and if we will boil our water, then we can, in a large measure, get rid of the danger.

The Chair—Gentlemen, the hour is growing late, and we had better pass to the next paper, which is by Dr. A. M. Bleile, of the State University, on the subject of "The Cholera Bacillus."

Dr. Bleile—When I accepted the invitation to read this paper, Mr. Chairman, it was with the understanding that it should not be necessary to present anything original or new, nor should I go into an abstruse discussion of the points connected with the doctrine of bacilli, but rather give the status of the doctrine as it stands to-day, and give such information as may be of practical value. In fact, the time at my disposal would prevent a long discussion of any kind

At this point Dr. Bleile read his paper.

THE CHOLERA BACILLUS.

BY A. M. BLEILE, M. D., Professor of Physiology, Ohio State University.

It is now very generally admitted that the so-called contagious and infectious diseases are caused by a living matter, a low form of plant—the bacteria. For some diseases this fact has been fully demonstrated, and the particular bacterium upon which the disease depends has been carefully studied,—tuberculosis, for example. In others, the specific bacterium causing that disease has not been found as yet. Some persons, it is true, object to this view, but they have contended themselves with superficial reading, and simply ignore the facts. They resort to logic instead, by which, as is well known, any point can be held. In the case of cholera, a living contagium was suspected long before the establishment of bacteriology. Careful observers had noticed that cholera would spread, always from India, generally along the water-courses, the then most prevalent ways of human travel, and in a new locality cases could, if carefully traced, always be referred to the importation of a fresh case from some infected locality.

During the outbreak of cholera in Egypt in 1883, the French and German governments, and later the English government, appointed commissions to seek for the cause of cholera. Of these commissions, the result of the German one, headed by Koch, have the most importance. His results in brief are as follows:

In 100 cases of cholera examined by him in Egypt, and later in India, he found among other and varying forms of bacteria, one particular form which he called the "comma bacillus"—the name by which it is at present known. These bacteria were found usually more numerous in the lower part of the small intestine, where the changes wrought by the disease are most marked. They would increase in numbers for two or three days, then a rapid diminution took place, and few only were found in older cases. A careful search for these bacteria in other similar or allied diseases failed to reveal them elsewhere. To further prove that these uniformly occurring organisms were the cause of cholera, he fed the dejecta of cholera patients to mice, cats, dogs, poultry and monkeys, but without producing the disease in them, nor could the bacteria be found later in the stomach or intestine. Injections directly into the intestine at first gave no result. When injected into the blood, he found mice could be killed, but only when these dejecta were used in large quantities. Koch, notwithstanding these negative results, still accepted the comma bacillus as the cause of cholera, and explained these negative results by other facts—namely, that neither leprosy nor typhoid fever germs can be transferred to animals, nor can "Rinderpest" or pleuro-pneumonia be transferred to man, and he supposed that these animals experimented upon were not susceptible to cholera. A year later, however, after prolonged and careful work, Koch did succeed in producing the disease in guinea-pigs. His first failures he explained in this way: The stomach of the guinea-pig is constantly filled with a food mass strongly acid, which in itself is sufficient to kill the bacteria. Then, too, the action of the small intestine is so rapid that the bacteria do not have time to develop there. By injecting soda into the stomach, the acidity is overcome, and by the injection of opium, the rapid action of the small intestine is allayed, and now it was found that the introduction of cholera germs into the stomach would produce a disease anatomically identical with cholera in man.

Numerous experiments by others have since fully confirmed Koch. This view of the causation of cholera meets with many objections. The strongest arguments against the view have been brought forward by Dr. Klein of England and Von Pettenkofer of Munich. Klein has, however, so frequently modified his own opinions that it is hard to define the position which he now occupies. He seems to admit all essential points of Koch's doctrine but refuses to accept his conclusions. The views of Von Pettenkofer are somewhat peculiar. While admitting the presence of the comma bacillus, he does not admit the bacilus as the sole or even principal cause of the disease. He sets up the following conclusion:

X plus y plus z equals cholera—x being the germ, y being local and temporal conditions found at the time of the epidemic at that place, and z being the individual disposition of the patient. The bacillus he maintains finds lodgment in the soil, favored by y—the local and temporal conditions of the same. Here some chemical body is developed, possibly through the action of the germ. This rises into the air, is taken in by breathing, and will then, if z is present, (that is, in susceptible persons), produce cholera. He fails to explain why it is that with y, the local and temporal conditions unchanged, and with z, the disposition unchanged, x alone (that is the germ) can and does produce cholera: but so convinced is he of the correctness of his view that he and his assistant, Doctor Emrich, attempted to prove it by swallowing pure cultures of Koch's comma bacilli, and cites the fact that they did not die, as a proof of the harmlessness of these bacteria. However, from his own account it is evident that he really did suffer from a mild attack of cholera, and that

Emrich had rice water dejecta, great weakness, thirst and hoarseness; that is, an attack which in all parts showed those symptons which we see in mild cases of cholera. That they did not spread contagion throughout all Munich is a piece of good fortune and providential interference not often to be relied upon.

Another case of experimental, though involuntary, infection in man, occurred in Koch's own laboratory. A physician working with cholera cultures accidentally swallowed some, and later had a well-marked and severe attack of cholera from which, however, he recovered after some days, but with a weakness lasting long.

The term comma bacillus is really a misnomer, as this form is, properly speaking, a vibro or spirillum. Nor does it resemble the printed comma as usually used—that is, it is not hook-shaped with a club end, as the ordinary comma is. It presents itself as a small elongated body about one-seventh the diameter of a blood corpuscle, or to compare it to a well-known microscopic object—one-half or two-thirds the length of a tubercle bacillus, being however, thicker and plumper than the latter. The curve which has given it its name may be slight, or it may assume a semi-circular or even more curved form. Sometimes we find two joined together, so that a form like the letter "S" will result. It is not readily found by differential staining as many other bacteria are. It can be cultivated in artificial media, as beef broth or nutrient gelatine, provided they have an alkaline reaction. It will not grow below a temperature of 60° Fahrenheit, but thrives well at a temperature of from 70° to 75°. When grown on the gelatine plate the colonies present a perfectly characteristic appearance. They are not circular, as most other colonies are, but they present an irregular scalloped granular mass. Later the granulation becomes more marked, and they look like little clumps of some highly refractive substance, as minute particles of glass for instance.

Only a slight liquifaction of the gelatine takes place. A funnel-like depression is formed, at the bottom of which lie the bacteria. There are no other bacteria occurring in the stools simulating their growth, and the comma bacteria or spirilli which have been found in the mouth do not grow so as to form colonies in the gelatine. There is also a chemical test which it has been proposed to use so as to distinguish the comma bacilli from forms closely resembling them. This test is known as the cholera red reaction, and can be brought about by treating a culture fluid in which they have grown with sulphuric acid, when a fine red coloration will ensue. It has been shown, however, that this reaction depends on the presence of indol, a substance which is formed by many bacteria, and the presence of nitrites, also formed from nitrates by other bacteria, and while both these substances are so far as known, formed only by the cholera bacilli, still the fact that we might have a mixture of bacteria, and therefore both substances formed at the same time, makes this test unreliable.

The fact that the comma bacilli have not frequently been found in drinking water, the commonest source of infection, can be explained by the small quantity of the water which is used for analysis, and that other bacteria which are present always in water, will rapidly crowd out the comma bacillus in cultures.

Two other bacteria may be mentioned, which so closely resemble the comma bacillus that they may give rise to mistakes First, the Finckler-Prior vibrio, which is frequently though by no means always found in cases of cholera morbus. Second, Deneke's vibrio, which was found in stale cheese. Microscopically these might be confounded with Koch's bacillus, but resort to artificial cultures will soon reveal their true nature.

How these comma bacilli cause the severe and often fatal symptoms, is still an open question. They are found only in the intestine and its mucous membrane, never in any of the organs of the body, or in the blood. The symptoms are mainly referable to the intestine also. It is held that the serious and fatal results are due to the rapid abstraction of water from the blood which is discharged into the intestine. Koch inclines to the belief that these bacteria develop a poisonous substance, a tox-albumen, and that it is the absorption of this substance to which the symptoms must be attributed. It is true that poisonous substances have been isolated from artificial cultures of the bacilli, and when these are injected into the blood, they are often rapidly fatal. On the other hand, the diminished volume and altered consistency of the blood would, in my opinion, explain nearly, if not quite, all the symptoms which we find in a case of cholera.

This discovery of Koch is of undoubted great diagnostic value. Competent observers agree that in all cases of cholera do we find this bacillus if it is properly sought for.

The danger from cholera lies in the first cases which occur in any locality, and they are notoriously difficult of diagnosis, but with the light we now have, such cases could be very promptly diagnosed and thus be prevented from becoming a source of danger to the community in which they arise.

While it is true that we often find the bacilli directly in the dejecta of such cases, it must be born in mind that the microscopic appearance alone cannot be relied upon, on account of the similarity in appearance of other forms which have been found there, so that in all cases, plate cultures must be resorted to. These in twenty-four to forty-eight hours will give us a positive answer, and measures can then be taken accordingly.

The clothing and linen soiled by cholera patients furnishes excellent material for examination if it has not been allowed to dry. Fortunately for us the comma bacilli do not possess a marked vitality, that is, they easily succumb to unfavorable surrounding conditions. They are readily killed by acids, the acid found in the normal stomach being sufficient to destroy them. So a low temperature, a temperature near the freezing point or a temperature above 125° Fahrenheit, is fatal to them. Drying out also destroys them, and for this reason Koch asserts that there is little danger of the transferrence of cholera by dry merchandise or by letters or books.

Other bacteria also, as already mentioned, speedily crowd them out of existence, and for this reason, the ordinary process of putrefaction must be fatal to the comma bacilli after a few days.

Koch found that they would live thirty days in pure spring water, six days in sewer water, and one day in a cess-pool. On moist linen or clothing, they live three or four days. In a half per cent. solution of carbolic acid, they are killed in a half hour. Sublimate, iodine and copperas also speedily destroy them. Lime has proven an excellent disinfectant.

As to the proper use to be made of this knowledge for the prevention of the spread of cholera, we should bear in mind that the disease can only rise from the introduction of the bacilli into the intestinal canal. In most cases the acid reaction of the normal stomach will prevent their onward passage and consequent disastrous effects. In fact, it has been demonstrated by many observations that in most cases of cholera there was a previous dietetic error in which a catarrhal condition of the stomach was set up, so that the bacilli could pass through unchanged.

During cholera times, then, the first thing would be avoidance of all such food as is apt to cause a disorder and consequent lessened acidity of the stomach. Only absolutely pure water or such water as has been sterilized, should be taken, and so also with solid food. The eating of fruit or uncooked vegetable matters, unless the source is absolutely above suspicion, is to be deprecated.

Patients affected with cholera should be promptly isolated and every means taken to make inocuous their dejecta, which alone can carry the contagion. This can be done best by burning, by baking or steaming, or by the use of proper disinfectants.

That there is no danger in the handling of such patients unless these dejecta gain access to the mouth and so to the intestinal canal, is evident, for we know that the cholera poison cannot be taken in by inhalation in fact experiments in which it was introduced directly into the lungs and the air passages have always failed to produce the disease, and nurses and physicians handling the sick have been remarkably exempt so long as they observed proper cleanliness.

That these measures should not be left to the individual, but that they should be carried out by properly constituted authorities, it is needless to say.

The question of protective inoculation against cholera, as is practiced against small-pox, and, possibly, against hydrophobia, has also excited some attention. It is based on the observation that persons suffering one attack of cholera are not likely to have a second—that they possess a certain degree, at least, of immunity. Brieger made guinea-pigs immune by injecting cultures of comma bacilli which had been made on infusions of thymus gland. He also used cultivations in meat infusion treated in a certain way. Klebs has isolated the poison by treating cultures with alcohol. The poisonous substances would be precipitated; in the solution was left a substance which when injected into animals produced very slight symptons only, but afforded an immunity against subsequent injections of the cholera bacillus. Ferran also experimented with these protective inoculations. While the observers mentioned and a few others are enthusiastic in the praise of this procedure, still it has not come into popular favor or use, nor is it likely to, since our means for prevention of the disease by destruction of the bacilli are so perfect that they are sure to succeed if they will only be properly used.

Dr. Bleile—I would like to say, Mr. Chairman, that if there are any who would like to examine them, I will be glad to show some slides showing the comma bacilli, and also some cultures of cholera germs. (These were exhibited).

The Chair—Dr. Bleile's paper is open for discussion.

Dr. Buechner—I move we adjourn.

Dr. McLean—I would like to ask the Doctor the question: What would be the natural effect upon the digestive apparatus of fright or any strong mental emotion?

Dr. Bleile—That always has a retarding effect upon the secreting of acids.

Dr. McLean—Would we not find in that the key to the effect of fright in cholera epidemics?

Dr. Bleile—I have no doubt that if there is anything in fright producing cholera, that it is due to that.

At this point the Convention adjourned until Friday, January 27, at 8:30 A. M.

MORNING SESSION.

FRIDAY, 8:30 A. M., *January 27, 1893.*

The Convention was called to order by the Chair, who said: The first thing in order is a paper by Dr. A. W. Fisher, Health Officer of Toledo, on "Local Quarantine Against Cholera."

LOCAL QUARANTINE AGAINST CHOLERA.

By A. W. FISHER, M. D., Health Officer, Toledo, O.

MR. CHAIRMAN AND GENTLEMEN OF THE CONVENTION: In considering the subject, viz.: "Local Quarantine Against Cholera," upon which I was requested to prepare a paper, I beg leave to present to you the methods that were adopted at Toledo during the past season when this country was threatened with an invasion of the disease. The methods adopted apply to inland cities or towns located upon lakes or streams of water.

I do not claim any originality in the methods used, for they were based upon rules and directions respecting disinfection and disinfectants that are familiar to you all, and that have been given time and again to the public for their guidance, application and protection.

The location of the city which I represent, near Lake Erie, upon the Maumee river, and being a great railroad center, with its large commercial interests, its extensive passenger traffic, its close proximity to neighboring states and to Canadian shores, both by water and rail, made it an important point to be guarded, not only for its own protection but for the surrounding country.

The application of the methods used and the selection of the points guarded, and the means adopted upon the lake and the different stations in and near Toledo, are presented to you for your consideration. I feel warranted in saying that the means adopted gave this city complete security and protection.

Toledo, with the recent annexation of Auburndale, has a population of over 100,000 inhabitants, and is situated on the Maumee river, about ten miles from Lake Erie. The river empties into Maumee Bay, thence into Lake Erie. The city is comprised of nine wards which, with the exception of the Sixth ward, are located on the west side of the river. The Sixth ward, about seven miles in length, is on the eastern banks of the river; although not so densely populated as the west side, nevertheless, it is thickly settled and has large and numerous manufacturing interests. The workmen are of all nationalities, and the number employed at these factories range from 80 to 1,000 men.

The factories located on the east side are: Maumee Rolling Mill, Malleable Iron Works, National Milling Company, Craig Ship Building Company, Craig Oil Company, Crystal Oil Company, Paragon Oil Company, Toledo Bridge Company, car and repair shops of the Lake Erie and Wheeling Railroad, and Toledo and Ohio Central Railroad, two large brick yards, and Chambers & Company's lumber yards.

These places are mentioned in order that you can form some idea of the large floating population that come and go to these manufactories and the numerous nationalities they represent.

The Union Depot is situated in the Fifth ward. Trains arrive from the east over the Lake Shore Railroad, and from the south over the Cincinnati, Hamilton and Dayton Railroad; from the north over the Lake Shore and Michigan Southern Railroad and the Michigan Central, and also from the west over the Wabash, Lake Shore and the Clover Leaf.

The Pennsylvania Railroad bridge crosses the river from the east side and enters the city in the First ward at Elm street. The depot is located one square above at Chestnut street. The Pennsylvania Railroad and Hocking Valley Railroad from the east and south, and also Toledo and Ann Arbor from the north enter at this depot.

Trains arriving from the south (short roads) stop on the east side of the river at the eastern terminus at the Cherry street bridge. The Lake Erie and Wheeling Railroad crosses the river at North Toledo and enters the city by a circuitous route. The depot is located on Cherry street (Second ward) between Champlain street and Woodruff avenue. Trains from the south and north on the Cincinnati, Jackson and Mackinaw also enter this depot.

The house of detention, investigation and disinfection was established on the east side of the river. The building was a two-story frame, in good condition, situated on a triangular piece of ground owned by the Lake Shore and Michigan Southern Railroad Company. The Pennsylvania Railroad and its tributaries pass on the north side of the building; the Lake Shore, and Cincinnati, Hamilton and Dayton on the southwest side, and the Columbus, Hocking Valley and Toledo, and the Toledo and Ohio Central on the north side.

Through the courtesy and kindness of Mr. Whittlesey, of the Lake Shore and Michican Southern Railroad, this building and the surrounding grounds were placed at our disposal. The first night we received a car load of immigrants from New York via Buffalo, consisting of thirty-five persons, male and female, and children. They arrived at 10 P. M. at the Union Depot, and were taken across the river in the same car and side-tracked on the northeast side of the building. They were fed and thoroughly cleaned, and the car was cleaned and disinfected, and two days afterward they were sent on their way West over the Clover Leaf railroad. All the immigrants that were detained at Toledo were taken to the quarantine station, where they were provided with food and lodging, beds and bedding, and other furniture was furnished and they were made comfortable. They were required to change their clothing. The clothing that had been worn was immersed in a solution of bichloride of mercury for three hours. It was then washed and boiled in a solution of carbolic acid, dried in the open air, and afterwards ironed. All other garments, quilts, etc., were placed in a tight room and subjected to the fumes of sulphur for eight or ten hours. All the persons detained were required to take a bath, medicated with carbolic acid or murcuric chloride. The cleansing process occupied their time and was complied with promptly, and met with their approbation, and no complaint was made about their detention and delay.

These measures consumed about three days, and when the time came for their departure they looked like different people; the children were amazingly improved, and instead of dirty faces and hands, uncombed hair and filthy wearing apparel, the opposite prevailed. Even the bags used for packing their garments, etc., after going through this process assumed a holiday appearance.

The following is a brief description of the Maumee Bay as bearing upon lake quarantine:

Turtle Island light-house is built upon a small island in Lake Erie, twelve miles from Toledo. The crib lights are one and three-fourths miles east of Turtle Island, and they mark the entrance to the straight channel of the bay and river. The north passage way is three hundred feet wide, and when completed the south passage will be the same width. Presque Isle (almost an island) is situated on the eastern shore of the river and bay, and is five miles from the center of the city. Grassy Point is over on the west side of the river, and is about a half mile from Presque Isle; Denman's creek enters the river at this point. Canadian vessels arrive at this port from Port Edwards, Sarnia, Kingston and Toronto, and the law requires that before any passengers are landed, they shall be reported at the custom house, and permission obtained.

The number of American and Canadian vessels arriving at this port from Canadian shores averages about eight per day. The number of Canadian vessels about twenty per month. There is no inspection of passengers. The crews of these vessels average six to eight men, and the average tonnage is about three hundred tons net. They carry lumber, coal, grain, ore and gravel. No rags are carried by these vessels into the port.

When lake quarantine was established at this port, and in order to control expenses, it was deemed advisable to inspect incoming vessels at the Lake Erie and Wheeling draw-bridge. This bridge as already described, crosses the river from the east side, Sixth ward, and enters the west side at Albany street, First ward. This was found to be utterly impossible. The men could not board the vessels, and the time was too limited to make inspections before the vessel made her landing, and in case disease was found on board the vessel would be in our midst.

The next point selected was Presque Isle. Two day men and two night men were provided with a row boat. The inspectors were unable to board the vessels, and on account of the tortuous and narrow channel the officers in charge of the vessels could not and would not slacken their speed for fear of grounding or meeting with some other accident. It was also dangerous to board a vessel from these boats, and this point was also abandoned.

I was advised by experienced lake officers and seamen to employ a tug, and place my inspectors on board the tug, and meet all incoming vessels at the crib lights, run along side of vessels and board them, and inspect same during their course into the bay and river.

Acting upon advice given, I employed the tug "Farragut," commanded by Captain John Skeldon, a man thoroughly conversant with the channel of the bay and river; he was assisted by one man only acting as pilot. Two sanitary inspectors for day duty and two for night composed the crew. Permission having been obtained from the Secretary of the Treasury, United States, to use the "Ivy" for this purpose, and to carry the inspectors on board. The tug plied between Presque Isle and Turtle Island, and whenever a vessel was sighted, they approached and boarded her, and made their inspection, obtained the name of vessel, captain and crew, where hailed from, cargo, etc. Number of vessels inspected—

American	23
Canadian	8
Total	31
Crew	149
Passenger	1
Total	150

Inspected after receiving orders from State Board of Health to discontinue lake quarantine:

Canadian	10
American	24
Total	34

DISINFECTION OF SHIPS.—Inasmuch as they can be almost hermetically closed and the escape of gas to a great measure prevented, the disinfection by means of sulphurous acid gas is recommended and advised. Four pounds of sulphur for every 1,000 cubic feet of space; should be used broken into fine pieces and placed in pans in such quantities as will burn rapidly; moisten the suphur with alcohol before igniting. Pump out all the bilge water; replace with clean water; add to the clean water one pound of murcuric-chloride to each ton of water (estimated). One drachm of bichloride of mercury to one gallon of water (1 in 1,000 solution) should be used for sprinkling floors, decks, woodwork, etc. Clothing and bedding to be immersed in the solution. Other articles that could not be disinfected with this solution should be fumigated with sulphur. Boiling for half an hour will destroy all known disease germs, and can be resorted to when other disinfectants would injure such articles.

Chloride of lime is one of the cheapest and best disinfectants; germs and the most resistent spores are destroyed by solution of this salt, two per cent.

The international conference held at Rome in 1885 on the means of disinfection against cholera recommends:

1. Steam at 100° C. (212° Fahrenheit).
2. Carbolic acid, chloride of lime.
3. Aeration.

Carbolic acid, chloride of lime are to be used in aqueous solution.

Weak solution—Carbolic acid, 2 per cent.; chloride of lime, 4 per cent.

Strong solution—Carbolic acid, 5 per cent.; chloride of lime, 4 per cent.

These means of disinfection will be applied as follows: First, for the disinfection of the person the weak solution should be employed.

Second, for disinfection of clothing, bedding and other articles of this kind:

a. Destruction.

b. Steam passed through the articles for one hour

c. Boiling for thirty minutes.

d. Immersion for twenty-four hours in one of the weak disinfecting solutions.

e. Aeration for three or four weeks, but only in case the other means recommended are inapplicable.

The application of dry and moist heat to the bedding, ship's linen, mattresses, carpets, baggage and wearing apparel, are most favorably recommended.

It is the opinion of the United States senators and other officers of the United States who have given the subject matter their attention, that in case a bill was passed to suspend immigration, that the worst class of immigrants would come into the United States through Canada. There is no doubt but a bill will be passed prohibiting the landing of these people upon our shores. The country demands protection from this fearful scourge, and prevention is better than cure.

Since writing the above the United States Senate has passed the bill introduced by Senator Harris against the introduction of cholera and other infectious diseases into the United States. This bill does not prevent immigration altogether but rests the power of suspension in times of great emergency with the President:

> "It makes it unlawful for any merchant ship or other vessel from any foreign port to enter any port of the United States except in accordance with the provisions, and with such rules and regulations of state and municipal health authorities as may be made in pursuance of or consistent with it under penalty of not exceeding $5,000.00. Any vessel at any foreign port clearing for any port in the United States shall be required to obtain from the United States consular officer, where such officer has been detailed by the President for that purpose a bill of health in duplicate, in form prescribed by the Secretary of the Treasury."

The marine hospital service is to co-operate with and aid state and municipal boards of health in the execution and enforcement of the rules made by the Secretary of the Treasury to prevent the introduction of contagious or infectious diseases; also—

> "Whenever it shall be shown to the satisfaction of the President that by reason of the existence of cholera or other infectious or contagious diseases in a foreign country, there is serious danger of the introduction of the same into the United States, and that notwithstanding the quarantine defense this danger is so increased by the introduction of persons or property from such country, that a suspension of the right to introduce the same is demanded in the interest of the public health, the President shall have power to prohibit, in whole or in part, the introduction of persons and property from such countries or places, as he shall designate, and for such period of time as he may deem necessary."

One million of dollars is appropriated to enable the President to enforce the act. Compensation is to be made for quarantine buildings and property received from states and municipalities.

It is the purpose of the general government to aid the state and municipal authorities, and not to interfere with them. Upon the discovery of the comma bacillus, and its being the cause of cholera, it was the opinion of scientific men, that the disease could be prevented and cured. Unfortunately, the past epidemic does not warrant that assurance.

It is stated that 265,760 souls perished in Russia, and in Persia 250,000 souls during the past year, and that the mortality rate was 50 per cent. of the cases reported, and that the mortality previous to this was not any greater. We must look for other measures of protection, and not sit idly by and see this country become infected with such a dire disease inflicting sickness, suffering and death, injuring us as a nation commercially and financially.

It is the history of all cholera epidemics that the disease germs hibernated during the winter and were hatched out in the summer, and the following season epidemic ensued.

This is the time to make the necessary arrangements to checkmate its propagation and introduction into this country. Sanitation is the initiative step, to be followed in its wake by suspension of immigration.

During the past year the sanitary force was doubled. House-to-house inspection was instituted. Wherever sewerage existed the owners of property were compelled to construct vaults according to the ordinances of the city and make proper connections. The old privy vault system has been condemned, and sewer connection, where possible, enforced, and the dry closet system recommended when no sewerage exists. Pools of standing and stagnant water have been abated by drawing and filling of lots. Every precautionary measure was instituted to remove nuisances and place the city in a good sanitary condition. Old houses and filthy tenements have been removed and torn down. The cases of contagious and infectious diseases have been decreased more than fifty per cent. over previous years.

Toledo receives her water supply from the Maumee river. The sewerage into the river is below the source of supply. The pumping station is located at the upper end of the city. About four miles above this station the sewerage of the Children's Home, located at Miami, drains into the river. Perrysburg and Maumee, two miles above Miami, are located respectively on the east and west banks of the river. No sewerage into the river from these towns. Measures have been instituted to correct this contamination. The efforts by the working force of the health department have received the cordial support of the police commissioners, and the people have acquiesced in the rigid measures adopted, and no complaint made for the increased expenditures incurred.

QUARANTINE REGULATIONS TO PROTECT LAKE PORTS.—First, establish lake quarantine. No effective work can be accomplished unless a tug is employed for such purpose. A large sign, 20x3 feet, marked "Quarintine Station" should be placed in a conspicuous position near the channel. Captains of vessels cannot fail to notice this sign, and will give their aid and assistance to inspectors to board the vessel. These vessels are usually towed into port and oftentimes from three to five vessels are in the same tow. To slacken their speed would imperil and endanger the vessels under such circumstances. It requires the care and attention of the captain, mate and pilot to manage the vessel, and they will pay but slight attention to the demands of outsiders.

In case a contagious or infectious disease were found on shipboard, the vessel could be anchored with safety in the locality where the station exists. Persons infected could be placed on board the tug and conveyed, in our lake region, to Grassy Point and placed in tents or buildings erected thereon, and receive medical care and attention. Grassy Point can be reached either by boat or by wagon road. The vessel could be held in quarantine at this point and receive proper sanitary care, and when provided with a clean bill could proceed to her destination. There would be no danger of spreading any disease at this point as it is completely isolated.

On the east side of the river, at the same place used during the past season, a house of detention, investigation, etc., could be maintained.

The Lake Shore and Michigan Southern Railroad, the Pennsylvania Railroad, the Toledo and Ohio Central, the Toledo and Columbus, the Indianapolis, the Cincinnati, Hamilton and Dayton, and the Hocking Valley Railroads pass at this point.

The facilities for side-tracking cars, cleaning and feeding immigrants and keeping them out of thronged depots are valuable considerations. The inspection and examination of cars and passengers at this point would not require more than four sanitary inspectors. They would control a number of roads, and would be able to do a vast amount of valuable work.

In case any disease, contagious or infectious, was brought there means could be adopted to remove them in cars from this place and convey them to an isolated section of the surrounding country.

Alexis is a station located in Ohio near the Michigan State line, about five miles from Toledo. The Toledo and Ann Arbor, Lake Shore and Michigan Southern, and Michigan Central Railroads, etc., etc., pass this point. All trains stop here for target and instructions. Passengers from the North and West, also from Canada, reach Toledo over these lines. A quarantine station should be established at this point. There are very few houses in this locality, and no danger of communicating disease to the neighborhood. Thorough isolation could be enforced; tents or buildings could be erected upon the large fields in the immediate neighborhood. Side-tracks are abundant and numerous. This system would control all the roads that enter the city, and would also provide a place of safety for any persons infected that would be brought here by the Lake Erie and Wheeling Railroad. Trains on this road should be inspected at Manhattan Junction, and the persons infected could be taken to Alexis from the station without entering the city. In this way the system would be economically administered. It would place the city in great security from contagion, give to the afflicted comforts and care, and would not endanger the neighborhood.

That epidemic diseasescould be controlled by the knowledge obtained through the investigations of bacteriologists was not only expected, but admitted to be a reality by a great many scientists. The practical application, so far as the management of the comma bacillus is concerned in its production of cholera, and the relief expected, have not been verified, and the ravages of cholera, and its high rate of mortality have not been diminished. A disease that invades all countries, no respector of persons and so destructive in its course, so difficult to overcome, the treatment so unsatisfactory, the mortality so great, appals nations. The researches of the laboratory, and the scientific investigations do not give the anticipated relief so anxiously looked for by the populace.

Another source of protection and relief is now looked for by the people, not by scientific investigations and laboratory researches only, but through the guardians of the public weal.

The action of the United States authorities in the suspension of immigration will be a strong protective factor, but will not in itself suffice. What the people expect and demand is the protection vouchsafed to them through the combined efforts of boards of health in rigid enforcement of the laws enacted for their protection, and thereby immunity from contagious and infectious diseases. They do not desire a practical illustration of the experiences and suffering caused by the disease that made such havoc in Russia during the past year, but they do want such combined action of local and State boards of health, that no disease-breeding spots will be allowed to exist in their midst, to furnish suitable soil for the propagation of the comma bacillus or any other germ which would be a menace to their safety and protection.

Dr. Reed—We had a very excellent paper from the Doctor, and one that gave us all the minutiae in reference to the quarantining of Toledo, but as the title was that of local quarantine against cholera, I failed to see where we as health officers, living in the interior of the State, get the information from his paper that we desire. Put the question now to yourself, and I will put it to myself, What am I going to do if cholera breaks out in Mansfield? What are you going to do if it breaks out in Millersburg or London, or some other town in the State. Dr. Fisher has described very carefully how he has endeavored to protect Toledo, but we wanted to hear from the Doctor how we, as health officers throughout the State, were going to quarantine against cholera in the most perfect and efficient manner. We cannot apply the quarantine of Toledo to Mansfield in every respect. We are within three hours ride of Toledo, and if the quarantine the Doctor designated—if he allows the party to escape as he did one party he had—we don't know how soon that party will turn up in Mansfield I suggest to the Doctor that he get hold of these fellows and hold on to them and not let them get away. But we, as health officers, have to take that chance. Now, I don't criticise the Doctor for that party getting away, but I bring it up as a practical matter to you, gentlemen. He found one party who was supposed to come from an infected district, and yet with his tugs and all the help he could get to quarantine at Toledo, he got away.

Dr. Fisher—Just let me interrupt you for a moment, that we may settle that matter. Before I had received authority from the authorities to establish a quarantine there this vessel had arrived, and an investigation revealed the fact that this party had departed two or three days before I had authority.

Dr. Reed—That puts a different face on it. Now, I am speaking of this to show you how it is that with all the care that a good health officer, as Dr. Fisher is, with all the care he takes of that port, yet at some time how easy it is for some one to escape into the interior of the State and into our midst. Now, the paper we wanted to hear, was a paper directing us how we could, in a most efficient manner—the best manner—quarantine these people who get into our midst. We don't want to stop trains on account of one or two parties coming from Toledo or Cleveland, or from any other railroad town, if it can be avoided, yet at some time we may have them coming into our midst, and how are we going to take care of them? That is the question we came here to hear discussed in this paper, and I should like to hear it brought out more fully than it is brought out by the Doctor's paper.

A Member—I would suggest that if a person does escape in this way—now if these suspects that went to Millersburg from Akron—if these suspects were first put under his surveillance, and the health officer had reported back to Akron the names of these persons and their residence, it would have been easy to have found where they lived.

Dr. Billings, of Medina—That is one reason that our board sent a delegate here, being an inland town, to learn how to take care of our filth. The paper that has been read has not been gotten up, to my mind, in a way that we can understand it—that is, for our place. The papers have all been on water courses, lakes and bays, etc. Now, I will state what we have in our place, and I would like to know, from a higher authority than we are, whether we have been doing right or not. We have drainage, of course, in our town. It is not level ground by considerable, but we have not got a system of sewerage. There are very few of the smaller towns in the State that have. We have advocated the idea of tile sewer pipe below the frost line, being opened at certain places, and at these points taking care of the sewerage with lime, etc. Now, if there is any better way, or if the State Board of Health thinks that it is a bad system, our board wants to know it. I was emphatically told to inquire about that, whether that was considered the best way; whether we could take care of this nuisance at the mouth of the tile better than in open ditches. Now, I hope that some one in this body who is posted well enough will tell me, so that when I go home I can tell our board what is the best thing to do. We don't want cholera any more than the cities. But it seems all the discussion so far has been on water courses; but there are other nuisances, and we want to know how to take care of them.

A Member—Get rid of them; that is the best way to take care of them.

Dr. Billings—That is all right, but how are we going to do it? It must be taken care of, of course. Of course we will enforce the laws to the best of our ability, but how can we do this work best?

A Member—It seems to me that the law gives each local board all the power that is necessary to take care of all these matters in their locality, and I take it for granted that each board is posted well enough to know what to do. There is the privy vault, and the hog pen, and the sewer, drainage, garbage, and all that matter. It seems to me that these local boards are composed of men of common sense and good judgment enough to take care of all these matters, and when they are at a loss to know what to do, they can apply to the State Board and get instructions. Now, I hope this health bill will pass that has been read, and also the bill constituting the trustees of townships boards of health. The townships and small towns and villages are more likely to suffer than the cities. The cities have the means and the money to carry on operations with. Akron is well taking care of its small-pox. What would we do in the small towns if we had those cases? The physicians would be running to and fro, and the people would be fairly panic-stricken. Now, our little towns and villages are suffering more, perhaps, than any other, and if the township trustees are vested with the proper power to take care of the townships, and our villages and smaller towns that have local boards now, why, I think the local boards are fully competent to take care of this matter; and if they cannot attend to it, why, we have the State Board that we can apply to for instruction; and I think the time is coming when we will have better laws and a better sanitary condition. I have attended this meeting to gain all the knowledge I could, and I think I am well paid for coming here; and I think when I can look about me and see three or four hundred men earnestly engaged in this work it means something, and I think the State of Ohio is going to be reclaimed, and we are going to be a clean, healthy State, and I thank God for it.

Dr. Moore—I rise to press the question asked by Dr. Reed: What shall small inland towns do to quarantine against contagious diseases? I belong to a town containing a population of about 2,500. Its water system and sewer system are both fairly good, but that is not what I came here for. I want an answer to the question, what are the best means to use to quarantine against cholera in towns of this size?

Dr. Probst—I would like to say that we have expected that this subject would be thoroughly discussed by the reading of a paper by Dr. Kohler, Health Officer of Akron, on "Municipal Cleanliness," which should cover the whole ground. Now, Dr. Kohler is Health Officer of Akron, and in Akron they are having a good deal of trouble with small-pox, as you know, at this time. He has been unable to attend, and also failed to send his paper; and I should suggest, as Dr. Miller, of the State Board, who was to read a paper, is also absent, that we spend the remaining time discussing the subject of municipal cleanliness, and its relation to cholera.

A Member—I rise to ask the question of Dr. Fisher in regard to the strength of solutions for disinfection. Now, I want to ask if he considers that solution sufficiently strong, wherever there is a liability to infection?

Dr. Fisher—Those are the percentages given by the international congress. In regard to the remarks of Dr. Reed, I might be pardoned for selecting Toledo as the basis of my paper for two reasons. In the first place, we are a lake port and also a great railroad center. Now, the railroad center will apply to Dr. Reed's town, Mansfield, and to other inland towns, and the lake quarantine will apply to those cities bordering on water courses. I endeavored to explain minutely the manner in which those stations were formed or placed where the inspections occurred. All these inspections were outside of the city limits. I had arrangements made with the managers of the different railroads to receive telegrams from certain points, stating whether they had any immigrants on board. Those trains were stopped at these different stations and if there were any immigrants on board they were taken off, cleaned up, and fixed in the manner I had described and given clean bills of health and sent on their way; the lake quarantine was done by a tug because it was an utter impossibility for any man to board a vessel in a row boat. It is a dangerous matter to board a vessel off a tug. If you would try that once or twice you wouldn't want to continue it, and if you do establish a quarantine on the lake you will have to use that means to do it. Now I cannot describe what ought to be done in detail in Mansfield or any other town. I expect men of good common sense to know what is necessary to do in their particular localities. I have described what would be done in Toledo, both upon the railroads and upon the waters. Of course it is not expected that I could give an outline to almost every town in the State. In reply to the Doctor about his disinfectants, those disinfectants were recommended by the congress I spoke of. Now, in regard to this man that came from Canada: He was disabled and had lain at the lower end of the city four to six days before any investigations were made regarding cholera; and the captain of that vessel violated the law in not reporting that case to the custom house, as was his duty to do, and he was liable to a heavy fine for not doing so. Then again, no person has authority to stop any vessel without authority from the United States. You can't hail vessels like you can wagons or anything else.

Dr. Jennings—I am not getting up simply to have my name appear in the *Journal*, and you will pardon me for a little history of my own village. Last winter we had an epidemic of diphtheria. Two physicians in town said it was not diphtheria. One physician said, I send my little children in to see these cases. I take them on my knee and depress their tongue with the tongue depressor and oftentimes they expectorate the matter over my coat, and then go into houses where there are children who are not suffering from sore throats. Now, four physicians in the town had no question in regard to its being diphtheria. Now, in the event that these physicians should not fear cholera, if we have the infection in the coming summer, or say it is cholerine or cholera morbus, or what not, and a majority of physicians in the place were positive or reasonably positive in regard to the diagnosis, what line shall the Board of Health take to guard against those physicians who say they can't find any cholera in the city or village.

A Member—I will tell you what I do in my village. If it is reported to me by a householder, I go and examine it, and if I think it is a contagious disease, I act accordingly. If I am in doubt, I call every physician in the village (because we are all friends), whether regular or irregular, to my aid and we decide upon it and act accordingly.

Dr. Miller, of Massillon—Mr. President: I don't know as I can interest the meeting any on this matter. Of course cleanliness is the foundation of all sanitary procedure, and I suppose we will avoid cholera in our little towns rather by cleanliness than by quarantine. I doubt whether in the small towns or cities inland we can do much by quarantining cholera. I suppose we will try to do the best we can. It is proper by quarantining the individual when we have a case, to surround him with such precautions as to not allow it to get out, not to allow the water supply to be polluted from this case, and not to allow the food supply to be polluted. In our town, heretofore, it has been our custom in past years to have a house-to-house inspection every year. As soon as spring opens we send an inspector around to every house in the city and he inspects the house and the premises and the barns and outhouses and makes a report to the health officer of the city of every house and business place or factory in the city, and gives such directions as are necessary to clean up. He also visits the cellar. Of course there is a question as to whether he has a right, and I instruct the inspector not to force himself into a cellar, because there is a question as to what will happen him if he does; but if he has reason to believe that the cellar is in dangerous condition to push them pretty hard, and then insist on its being cleaned up. The inspector orders that in so many days the offensive matter about the premises shall be cleaned up. In a few days he is back to look over the ground and he keeps going back. He watches all these places. The places that are cleaned on the first order don't need so much watching. In regard to our water supply: We have had a supply gathered from a little stream, and the water-shed is not taken care of as it should be. Now, in the last year or so we have been using water from wells three or four hundred feet deep, so I believe we are going to have a good water supply. I don't believe we will be troubled with cholera if we can keep the town clean and get rid of all this water, except the water from the deep wells. There is nothing in the neighborhood of these wells which I believe will pollute them. They are three or four hundred feet deep. Perhaps the water is a little objectionable on account of hardness, but I believe it is wholesome water. I believe I sent an analysis to the Secretary of the State Board of Health, and if it had been objectionable I presume he would have spoken of it. Now, the special matter of the management of cholera. I don't know as you are going to keep it out. Sometimes a well man gets off a train, and some man meets him who has gone there to see him, and this man is as well as you are, or your man that goes to meet him, and he may be able to whip your man and go on into the town, because he is a well man. An hour afterwards he may not be a well man; but when you find he is not a well man, surround him so that he will not come in communication with any person else, and take care of his excreta so that it does not get into any water supply or food supply. This is true of typhoid fever, too, and yet we find that typhoid fever is going on all the time. And yet, I suppose, the President would agree with me, and the Secretary of the Board, that in ninety-nine cases out of a hundred the man who has typhoid fever has taken it into his stomach through his food, water or milk, or something he drank, and which was in fact the excreta of some other fellow that had it. The same is true of cholera. I take no stock in the idea that you are going to catch cholera in the air. I don't think that. Of course, I do not say that from my own experience, but from the experience of men who have studied it, and analyzed all the surroundings of the cholera question. This cholera business is going to be a great blessing to the United States. I think already the cholera scare has saved more lives in the United States than there is any probability that cholera will destroy when it does come; and when we get through with the cholera epidemic, if it comes, we will be a nation of sanitarians, and in the next five years, if it should destroy 20,000 lives or 50,000 in the United States, in five years from now, the balance is entirely in our favor. I tell you cholera is one of the greatest sanitarians on this earth. If we didn't have yellow fever, or cholera, or something of that kind, we would be the dirtiest set of fellows on the earth. It is a fact that we ought to be ashamed that we go along sleeping and paying no attention to anything, and allowing everything to go at loose ends. Now, if you have a case of small-pox in your town, you will find the people falling over each other to get vaccinated, but if there are no cases there, they will say, "are you sure you have pure virus?" But the great point in getting rid of cholera is perhaps not so much to figure out how you will quarantine your town but be ready to quarantine the individual who gets it, and when he comes there and develops cholera, have arrangements to take care of him. Perhaps you may not have a pest-house. I recommended to our board last fall, when it seemed likely we would have cholera, to get two or three good sized tents and have them ready, and in that way you could put them up in an hour's time, and have a cholera hospital. So, if some person was suspected, or some person came to town and developed cholera, take him there and surround him with all the precautions you could. Now, in little places perhaps the best preparation that could be made is to provide so that very quickly you can take care of these cases, and in no way can you do that so quickly as to select a place beforehand where you can put these tents, so that some person won't tear them down and mob you. We have a lot that the city bought some years ago. Have a place where you can put up your tents, and secure two or three tents. Probably they will not cost over fifty dollars, and when the time comes you can set them up in twenty minutes, and put a board floor in the tents in an hour's time perhaps, and then you are ready for business. Now, that I think is the best way for a small place to prepare for it, and that is what I had in mind.

Prof. Nelson—Doctor, would you advise sending a patient to the pest-house if you thought he had cholera?

Dr. Miller—I don't think I would, if it is so that he can be taken care of at home.

Prof. Nelson—Would you, under any circumstances, send a cholera patient to the pest-house?

Dr. Miller—Well, the cases I have in mind were those who have no friends to take care of them. You must take care of them in some way, and the question is whether you had better depopulate a hotel by putting them in there, or have a place and make them comfortable.

Prof. Nelson—I have no objection to your tent idea, but suppose you have a small-pox pest-house in Massillon, and a stranger comes to your town who has cholera, should this convention put itself on record as saying that a cholera patient should be sent to the pest-house because it is such an infectious disease?

Dr. Miller—No, I am not talking about cases of persons who have friends to take care of them, because I think it is better to take care of them at home. If you could absolutely make it certain that none of this man's excreta should get into the stomachs of others, they would be safe, and they could go about him with these precautions, and take care of him properly and not abandon him by any means. The tent idea is simply this, and I will apply that to the whole pest-house business, that s, that they ought to be isolated. Dr. Fisher has told us about his experience in Toledo. He has, as I understand him, a fire-proof house, but it is not powder-proof, or nitro-glycerine proof, or anything of that kind. Now, it seems to me, take a heavy dog tent and board it up to the angle where the roof strikes the wall, board it up and put a floor in it, and every old soldier knows you have a pretty good house, and when you are done with it, touch a coal of fire to it, and it only cost $50.00 in the first place, and burn it up. Now, there is a class of people who resort to radical measures, and they have a liking for burning down pest-houses. They mistrust that contagion lurks in them, and they resort to the method recommended by the State Board of Health, and that is, cremation. Now, there are a great many people who, from different motives perhaps, think the same thing about pest-houses.

Dr. Probst—There is one word I want to say in connection with what Dr. Miller has just said about the quarantine of patients in a town. I want to call attention to the fact that when they had cholera cases in New York City, the New York Health Board adopted a plan there that, in my judgment, is not safe, and one which I certainly would not want to recommend to boards of health in Ohio. For instance, a person is taken sick with cholera in a house where there might be several families, and several members of the family in which this person was taken sick. Now, the New York Board of Health did not quarantine all inmates of the house. They put guards and physicians in charge of the house, and watched it very closely, and took care of the stools, and everything of that kind, but the inmates were allowed to go back and forth under observation. Now, they had no accident from that, but I think I can see how they might have had an accident. These persons were exposed to cholera by living in the house where cholera patients were, and you know that many cases of cholera commence with a diarrhœa which does not call attention to the disease for a little time. These people being out on the street, might well be taken with the cholera during the day, and infect a great many places before they were taken home. So, I think, it is proper where a case of cholera breaks out that all the inmates of the house should also be quarantined. Professor Nelson, last night, called attention, in a most excellent paper, to the fact that cholera, in probably ninety-nine cases out of a hundred, is conveyed through the water supply, and that, to my mind, is an indication of the duties that boards of health have to perform. I have no doubt you will all find in your towns, if you make a house-to-house inspection, that you have a large number of wells in your town that are being polluted by the leakage of some cesspool or privy vault, and a close inspection would reveal that fact. Such a well ought to be closed up, and the use of such water prohibited. Then towns that have public water supplies should stir up their water-works boards to look after the conditions which could easily be remedied, that are polluting the water supply. Under the laws of the State the water-works board or authorities of the town have a right to control all sources of pollution extending to a distance of ten miles up a stream from the water-works. That would take it possibly into the corporation of some other town. It does, in one case in Ohio, on the Ohio river. You would no doubt find, in examining a stream, that in a great many places slaughter-houses, privy vaults, etc., are polluting the stream which could be remedied by proper action of the board of health. I think along this line is the work that ought to be done now by local boards of health to prepare for cholera next spring. It is certainly important to remove the filth that may be found in different parts of the town, but I think too much importance has been given to accumulations of filth. The history of cholera in Italy, France and Spain, in 1884 and 1885, will show that the filthiest of towns that had an absolutely pure water supply, a water supply that could not be polluted, invariabby escaped epidemics of cholera. A town may abound in hogpens and privy vaults, but if it has its water supply so guarded that it is impossible that cholera stools could get into it, there will be no epidemic of cholera. So I think it is this matter of the water supply of towns that boards of health should pay special attention to during the coming months.

Mr. Price—We are not all physicians that are here, but we are all interested in the health of our citizens in our towns. Now, one question has come up in our board of health which I would like to speak about here, and that is this: Our physicians, with the exception of one, will visit cases of these contagious and infectious diseases and go from one house to another without a change of apparel. Now, it seems to me from the instructions we have from the Secretary of the State Board of Health, with the disinfectants we are all using in the houses, that a physician might be as likely to carry it as any person else. I am speaking of diphtheria more particularly, which we have had in Marysville, and one of our physicians even lost his little boy, and he attributes it to the fact of carrying it in his whiskers and kissing the child when he came home. Now, if this disease can be carried in the clothing, why can't a physician be compelled to change his clothing as well as persons who frequent or live in the place where this disease is located? I think there are enough physicians here to answer that question, and to answer it plainly without a long argument.

Dr. Blair of Lebanon—While considering the various means by which cholera may be brought to a place and disseminated, I think the ground has been pretty thoroughly gone over, but it occurs to me that there has been one omission, and that is the mode of disposal of the excreta on our railroad trains, and, perhaps, steamers. The water closets empty directly upon the ground. Some of them are closed at the stopping places, and sometimes they are not. Now, an emigrant taking the cholera on board of one of our trains may deposit his excreta at a number of places, and that acts as a source for the dissemination of cholera. Would it not be well, in preparing our bills for the legislature, or in our recommendations to the legislature, that something in the way of a dry earth plan of disposal of excreta on railroad trains and boats should also be adopted, something in the way of a bucket, with proper disinfectants, to receive the discharges, and at proper intervals dispose of them?

Dr. Hoover—In reply, I will simply say that last summer, when we were threatened with an invasion of cholera, we found the railroad companies with which we came directly in contact here ready to co-operate, and that the Pennsylvania Company is at work now trying to devise some method by which the stools can be received in a proper receptacle and disinfected, and then emptied at certain selected points afterwards. There is no trouble in securing co-operation of railroad authorities in matters of that kind. They find it to their business interests to take every possible precaution, and assure the public that they are doing so. Before this discussion closes I want to make an allusion to one of the obstacles met with by local boards of health in the enforcement of proper sanitary legislation, and that is the financial aspect of the case. Town councils, as a rule, seem very loth to part with any money that is likely to be expended by health authorities of their municipality. They consider it an unnecessary expense. I just want to state briefly the cost of an epidemic of typhoid fever in the town of Plymouth, Pennsylvania, a town of ten or twelve thousand inhabitants, and let you draw your own inference as to which is the cheaper plan, to prevent or take care of the epidemic after it breaks out. The cost of the epidemic, as reported by the local health authorities at Plymouth to the State Board of Health of Pennsylvania, is as follows: Expenses of 1,153, sick at their homes, $59,100.17; expense of the same number at hospital, $8,000; loss of earnings, $30,020.08. Besides the expense of the sick, there were 114 deaths. The loss of annual earnings by the 114 deaths was estimated to be $13,419, making an aggregate of $110,539.77 that it actually cost the town of Plymouth to arrest the progress of typhoid fever. The average value of a human life, as estimated by the late Dr. Jarvis, of Massachusetts, was placed at $1,000. Estimating these 114 who died as worth $1,000 apiece, the amount would be $114,000 that was lost to the village by this outbreak. Including that with the actual expenses of the epidemic, and the grand total was $224,539—more money than would be expended in the State of Pennsylvania in ten years for sanitary purposes. The estimated cost of the cholera epidemic at Hamburg last year was twenty-five millions of pounds, or $125,000,000. Just think of a man who wants to put sanitary regulations on a financial basis. To judge whether they are worth their cost he ought to take the other side of the question into consideration also.

Dr. Mayhew of Westerville—It would not be inopportune to call the attention of the meeting again to the question raised by Mr. Price, of Marysville, as to the propriety of a physician visiting different cases promiscuously about his town after coming from the presence of contagious diseases, such as diphtheria and scarlet fever. In our town the board has had some trouble in that respect, and reflections have been made upon the Board of Health for not prohibiting it. I am sorry to say that not all the physicians of Westerville will change their clothing before going to other houses after visiting these places. Now, I would like to have the sentiment of this meeting upon this point. I would like to have the Secretary of the State Board of Health give us his opinion upon that point.

Dr. Probst—I think a physician should be required to take the same precautions that are required of other people in the house. You cannot very well quarantine a physician. It is necessary that the sick shall be treated. He has to see the sick and go about his other duties, but he should take the same precautions you would require of the inmates of the house; that is, he should change his clothing or wear garments that would protect his clothing and disinfect his hands and beard, etc., after visiting a case of contagious disease.

Mr. Price—I want to know what we can do in case a physician does not do it; what rights have the powers that be to compel our physicians to do it?

Dr. Probst—Your Board of Health has a right to adopt a rule that shall be valid for physicians, requiring certain things that physicians shall do in order to prevent their being a source of danger. Then, if they don't do it, swear out a warrant for their arrest and bring them before the mayor.

A Member—That brings up the question I raised a little while ago Now, in the event that a physician should attend a patient who was wel known to be suffering from a contagious disease and he should assert that it was not contagious in any sense of the word, how will you proceed there? How are you going to find out about the disease when a physician reports that there is no contagious disease in the house? Of course no physician would undertake to diagnose a case he has not seen. That would not be ethical, sensible, or anything else, but you know that where there is a great deal of smoke, there is usually a little fire. Possibly there may be exceptions. There may be vapor which is not smoke, but usually you can depend upon there being something in these rumors, and in the event of a well known epidemic where physicians of character and respectability had said that in a certain village or neighborhood there were individuals suffering from a certain contagious disease and other physicians in the same village go in to see these same cases that reputable physicians had declared contagious, and say they are not contagious; saying "I am treating plenty of cases just like Dr. A claims are contagious and I know he is mistaken; I have no cases and he has no cases."

Dr. Probst—I believe there is nothing in the laws now in regard to the rights of a board of health to send its health officer into a house to make a diagnosis of a case, but that has been amended now in this proposed bill before the legislature. [At that point Dr. Probst read that portion of the bill relating to the matter.] This will give the officers of the board of health a right to go into the house and make an examination, and they might call in any number of physicians they may deem necessary to have a consultation in regard to the case.

Mr. Starr, of Defiance—There is a question I would like to ask of the Secretary, and that is, in cases where persons are attacked with cholera, what is the proper way to dispose of the stools of that person? Should they be allowed to fall into vaults or sewers; or, in case of these hospitals built outside of the city, carry it out and put it into a hole, or what is the best method to dispose of it?

Dr. Probst—They should be disinfected, I would say. The board has issued circulars that have been sent to all the boards of health, a circular on the prevention of cholera, recommending the steps to be taken in cleaning up a town, and also in regard to what should be done with stools, and we will be glad to furnish all who want them with these circulars.

The Chair—The point which I think he wants to bring up is, after the stools have been disinfected.

Dr. Probst—If the stool has been *disinfected* it may be placed anywhere without danger. It must be disinfected, and you should never dispose of a stool in any way until it has been, and then you can do what you please with it—throw it into a privy, sewer, or anything else.

Dr. Buechner—I would like to ask a question. Do any of the gentlemen here know if there has been a legal decision given on the question of who shall take care of persons that are quarantined in a house? I have a quarrel going on in our place now. I used to provide for them. I quarantine diphtheria just as strictly as small-pox. In cases of measles and scarlet fever, if the father of the family goes to some other place to board, and promises me absolutely that he will not in any way come in contact with the sick child or parties that are attending the child, I will give him a permit to work, and he can support the family. But in cases of diphtheria I will not permit them. I will shut them up, except he has left the house before the guard is put on and before the case was reported, even if it was only suspected. If he leaves the house then and disinfects himself, and doesn't return, I will let him work. But in the majority of cases they prefer to remain at home. I quarantine them, and, in most cases where the men earn a dollar and a quarter to a dollar and seventy-five cents a day, if they do not work for four or five days they have no money to buy provisions. I always send one of my sanitary policemen to inquire what they need, and I used to send them provisions, and I would approve the bill and send it in and our council used to pay it, because our township trustees refused to pay bills of that kind, claiming they had only a right to support paupers, and these families would not be paupers if we wouldn't shut them up. They claimed to have taken legal advice on the matter, and that our prosecuting attorney informed them they should not pay these bills. The thing went on all right until we had that outbreak of diphtheria last winter, and the bills came in rather suddenly. We have now, fortunately, or unfortunately, a city government of four commissioners, and they have to approve all bills, and the city commissioners informed me that they would not, in future, pay any bills. So I don't know who will pay them. I have a case now in a house where there are three cases of diphtheria, and I sent them provisions and said I would be responsible for it, and probably I will have to pay it out of my own pocket, because I will not let a family suffer that I shut up. But I want to know if there has been any legal decision as to who should pay it. Now, I think the city should pay it. I think these people are shut up to protect the rest of the inhabitants of the town from that disease, and on that account I think they ought to pay it, but the township doesn't want to do it, and I don't know what to do.

Dr. Hoover—In trying to answer Dr. Buechner's question, I cannot throw any light on it. Personally, it is my opinion that when the agent of a municipality shuts a family up in a house and prevents him from earning their living, that the community is liable for the expenses incurred—that they must take care of the family. I don't know of any decisions having been rendered on that point, but I would like to see it tested. I believe the courts would compel the city to pay the bill. It would be a matter of the greatest injustice for Dr. Buechner as one of the city officials, which he essentially is, as health officer, to shut a family up in a house to protect the city against the spread of the disease, and then let them starve. It seems to me that as a matter of common law that the city would be liable for any expenses incurred in providing for that family while they are in quarantine.

Dr. Fisher—In Toledo we have an ordinance which provides for that, and the city pays the bills.

On motion, the Convention adjourned.

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